THE IRON AGE

A Review of the Hardware, Iron, Machinery [illegible] etal Trades.

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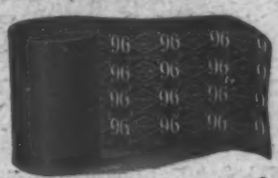

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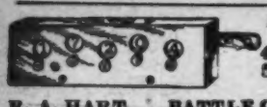
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THE IRON AGE

THURSDAY, JANUARY 16, 1902.

A New Crank Pin Turning Machine.

The Work Remains Stationary and the Tool Travels Around It.

By simply reversing the operation ordinarily employed in turning the pins of a crank shaft, the machine which we illustrate overcomes many of the difficulties usually encountered in connection with this class of work. In finishing up a crank shaft on a lathe the turning of the crank pins has always been an arduous task. Where the shaft is of two or more throws the perplexity is increased proportionately. Since small engines, such as are used in connection with automobile and boat building, have been produced extensively, it has been necessary to manufacture crank shafts of two or three throws at comparatively low cost. In addition to being arduous the ordinary lathe method is costly, requiring much time and great care.

It has always been a difficult matter to properly balance the work by the application of counterweights in order to get the work to run true to center. Still greater has been the problem of maintaining this accuracy of balance. As the work progresses it is generally found that the blocking shifts and the work does not come out perfectly true. To correct this requires additional labor. As the distance from the pins to the center is generally considerable it is necessary to take light cuts. When the shaft is of more than one throw, reblocking or rebalancing is required.

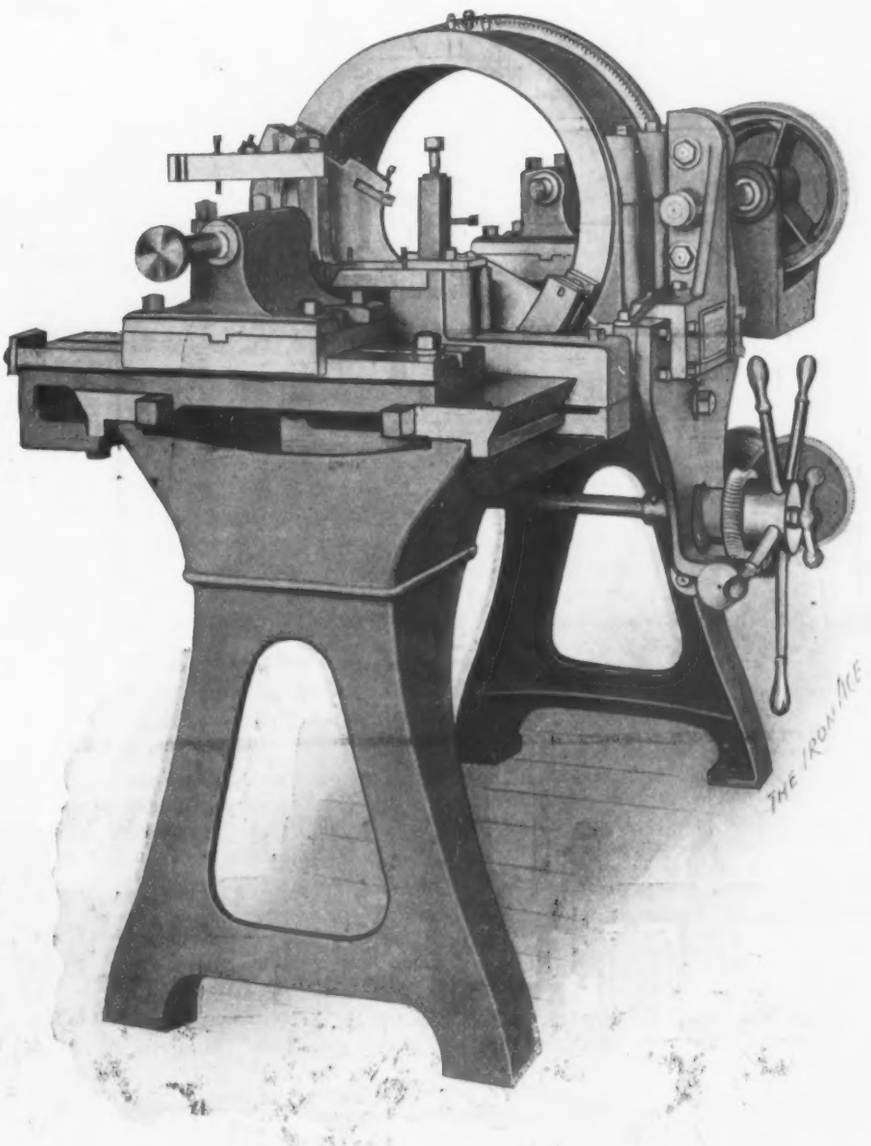


Fig. 1.—General View of the Machine.

A NEW CRANK PIN TURNING MACHINE.

With the crank pin machine, it is claimed, these obstacles are overcome. The employment of this machine obviates all necessity for blocking or counterbalancing, because the shaft is rigidly fastened to the bed of the machine. The tool then rotates around the work. Instead of changing the center of the work, the center of the machine is shifted.

This is the chief feature of this machine and the

underlying principle wherein it differs from the ordinary lathe.

Fig. 1 shows the general design of the machine. It is so arranged that it will take either long or short crank shafts. For holding short shafts a pair of centers or tail stocks are provided. When the shafts are too long for these centers, the latter are removed and blocks, containing bushings and a tightening bar, are substituted. Fig. 1 shows the machine fitted with the centers. All of the other engravings show the machine arranged for long shafts. While either the centers or blocks are furnished with the machine, in practice the blocks are generally used for all but very short work.

In the side and end elevations, Figs. 2, 4 and 5, these blocks are designated A. One is placed at each end of the bed. Bushings are made to conform to the diameter of the outside bushings of the shaft, and the top bar of the blocks is bolted down securely. The steady rest B is then adjusted so as to surround the square crank, which is secured in the rest by means of set screws. These fixtures rest on transverse slides and they are adjusted sidewise, so that the center of the crank pin comes central with the axis of the machine. The tool, which is held in the cutter bar C, is then adjusted by means of the screw E, which runs in the bearing D. The upper portion of the cutter bar also comprises half

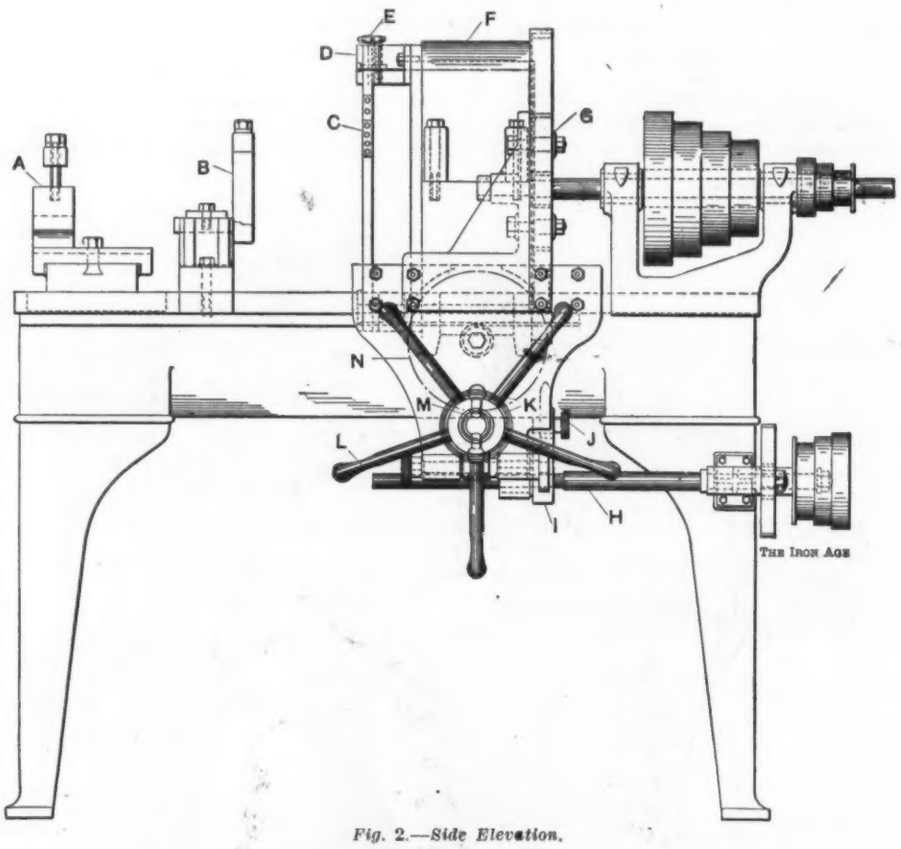


Fig. 2.—Side Elevation.

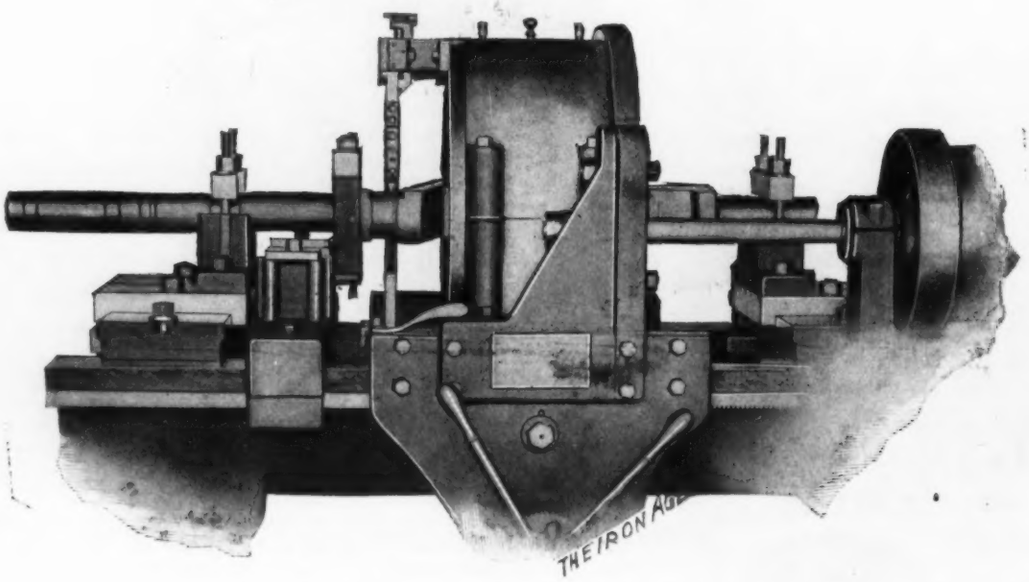


Fig. 3.—Showing Method of Fastening Work.

A NEW CRANK PIN TURNING MACHINE.

of the bearing for the screw E. The entire cutting apparatus is fixed to a drum, which revolves in an outside bearing, F, and is rotated by means of gearing G.

The shaft H conveys the power for the horizontal movement of the saddle, drum and, of course, cutter bar, all of which are rigidly fastened together. The shaft H

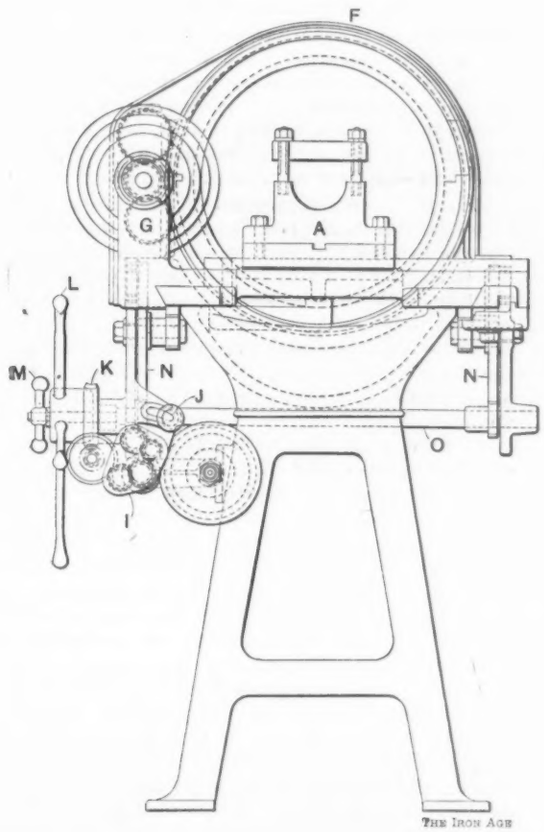


Fig. 4.—End Elevation.

as well as the main shaft, which drives the gearing G, are splined. The shaft H drives the chain of spur gears I, which, in turn, are connected to a worm which operates and is operated by worm wheel K. This worm

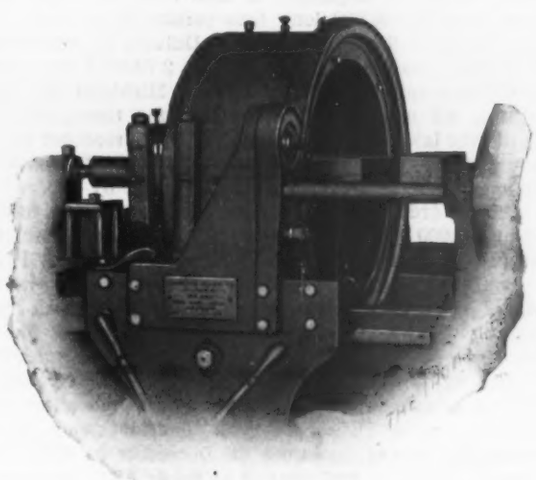


Fig. 6.—Showing Method of Driving Drum.

A NEW CRANK PIN TURNING MACHINE.

wheel surmounts the shaft O, which operates spur gears and pinions, N, which are duplicated in the front and back of the machine and are enmeshed in the rack on each side of the bed. By means of the knurled screw J the position of the intermediate pinion in the chain of gears I is changed and the horizontal movement is reversed.

The lock nut M engages or disengages the star handle L, by means of which the horizontal movement is controlled by hand when desired.

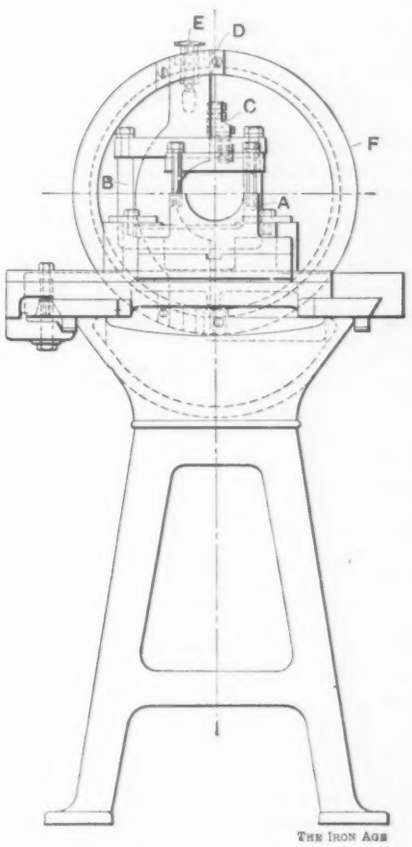


Fig. 5.—End Elevation.

The screw E is surmounted by a bronze star, which comes in contact with the spring lever shown on the saddle in Figs. 3 and 6. When this lever is pulled outward the star turns a point with each revolution of the drum. As soon as the required depth of cut has been obtained the operator releases his hold on the lever and the cut fixed is maintained for the balance of the horizontal travel.

On this machine the work is placed between the centers or retaining blocks according to the center of the shaft itself or end bearings. The entire work is then shifted transversely so that the center of the crank pin comes central with the axis of the machine. The exact center of the machine is first ascertained by means of center gauges or plugs. These are steel blanks about 8 inches long, 3 inches wide and ½ inch thick. The gauges are placed on the cross slides on each end of the machine. A small steel stop is fastened to the rear end of each slide, as shown in the general view, Fig. 1. When the center of the crank pin is desired gauges are made of the proper size and placed on the cross slides in substitution for the center gauge.

An advantage of the machine is claimed in the fact that drop forgings can be used instead of the solid forgings, when so desired. It is claimed that the work performed on the machines cannot be equaled on a lathe for accuracy. It is also said that the machine will produce the work in one-third the time required on a lathe. Another feature is its simplicity of construction and operation, which permits of its being operated by any one competent to run a lathe. The machine as made at present takes a shaft up to 7 inches throw of crank, provided that the shaft is not over 3¼ inches in diameter in the rough. The machines can be quickly changed to more or less throw of crank without removing shaft

from main centers. The machine is built for and sold by the Crank Pin Machine Company, 135 Broadway, New York.

The Mineral Production of the United States.

The publication by the Geological Survey of the "Mineral Resources" for 1900 enables us to give for the first time a connected review of the larger operations of this surprising year. "Every chapter in this report is a census of the productive features of the industry, as complete as possible with the means at command." That sentence from the introduction by Dr. David T. Day, the chief of the division, gives the keynote of the whole report. The figures are obtained directly from the producers themselves; much information has been added by many local experts, and the technical press has furnished prices, market reports, new technical processes and new mining enterprises.

In 1900, for the first time, the value of our mineral products passed the $1,000,000,000 mark. That is a great saying in little compass. The exact figures are $1,067,605,587, a gain of $95,704,693, or 9.85 per cent., over 1899. This gain is much less actually and proportionately than the gain of 1899 over 1898, which was 39.20 per cent.; but it is more than three times the normal growth of the mineral industries from 1880 to 1898, and shows that those industries kept pace with the national prosperity in 1900.

Iron and coal, as heretofore, are the most important of our mineral products, the value of iron in 1900 being $259,944,000, and of coal $306,891,364, an aggregate of $566,834,364, or more than half of the total production. Nearly all the important minerals increased in output during the year, though copper increased in product and declined in value, and zinc declined in both product and value. Every variety of fuel increased except anthracite coal, which declined from 1899 over 2,700,000 long tons. The total value of the fuel in 1900 was $406,250,518, a gain of 19.22 per cent. over 1899. The average price of anthracite coal per ton at the mine in 1900 was $1.49, 3 cents more than in 1899; and the average price of bituminous coal was $1, 13 cents more than in 1899.

Metals.

Iron and Steel.—At the beginning of the last century comparatively little iron and steel were made in any country; there was little demand for them. Then came the railroads, beginning in 1825; then came the street railways in 1832; then iron and steel bridges; then iron and steel steamboats; then steel frames for large buildings; last, steel freight cars, and along with all these a constantly increasing use of iron and steel for machinery, pipe, hardware, stoves, shovels and a thousand and one other articles. The last year of the first quarter of the century witnessed only the beginning of this huge development; the last few years of the last quarter alone have seen its ripest fruits.

The invention of the Bessemer process in 1855 and 1856 made the great railroad extension possible; with its companion, the Siemens open hearth process, dating from 1864, it has made steel bridges, buildings, ships and cars possible. Beginning with the use of the hot blast by William Henry, at Oxford Furnace in New Jersey, in 1834, the modern blast furnace has made the application on a large scale of these steel making processes possible. And Nature has made the whole development possible. No other country possesses in such abundance as the United States the necessary raw materials; and no other country has produced a more skillful class of iron and steel makers than our own. Back of it all is chemistry, that science which, in 75 years, has changed the face of Western civilization, and shown that the philosopher's stone is really iron ore.

The record breaking output of pig iron in 1899 was, contrary to expectation, exceeded in 1900, both in quantity and in value. The gain of 1899 over 1898 was prodigious, and was recognized as the result of abnormal conditions, which could not last; nevertheless, 1899 was surpassed by 1900. The average price, also, of pig iron increased from $18 in 1899 to $18.85 in 1900, almost reaching the maximum of $19, attained in 1887. Although the production of Bessemer steel ingots decreased, the production of open hearth steel increased, as did also the production of steel rails, and their average price at the works was $32.29 in 1900, against $28.12 in 1899. Our total imports of iron and steel in 1900 amounted in foreign value to $20,443,908, whereas our total exports of iron and steel in 1900, including locomotives, car wheels, machinery, &c., amounted to $129,633,480, against $105,690,047 in 1899, $82,771,550 in 1898 and $62,737,250 in 1897. Our exports of iron and steel have more than doubled in value in the last four years. These exports do not include agricultural implements, whose exports amounted to $15,979,909, a value more than threefold what it was five years ago. The United States produced 34 per cent. of the total world's production of pig iron in 1900, and over 37 per cent. of the world's production of steel.

Iron Ores.—Our production of iron ore in 1898, 1899 and 1900 has never been equaled by any other country, the nearest approach to our output being made by the German Empire in 1900, when it produced 18,667,950 long tons; and yet this nearest approach was about 2,000,000 tons less than the output of the Lake Superior region in 1900, and more than 4,000,000 tons less than the output in 1900 of red hematite ore alone. Our total production of iron ores increased to 27,553,161 long tons, an increase of 12 per cent. over 1899, and their value went by a great leap to $66,590,500, or 90.26 per cent. over the value of 1899. The number of tons produced in 1900 was 42 per cent. greater than in 1898, a marvelous record.

The best of it is that the bulk of the iron ore mined in this country is used in the production of pig iron in this country. From 1889 to 1900, inclusive, the production of iron ore was 206,060,395 long tons, an average of 17,171,700 tons per annum, and the production of pig iron was 114,931,099 long tons, an average of 9,577,592 tons per annum—an apparent average yield of domestic ore of 55.78 per cent., which is, however, too high.

The Lake Superior region, embracing iron ore mines, chiefly red hematite, in Michigan, Minnesota and Wisconsin, produced in 1900 its maximum output of 20,564,238 long tons, 75 per cent. of the total for the United States, more than was mined in the whole country in any previous year, except 1899; and of this enormous output the Mesaba range alone, in Minnesota, produced 8,158,450 long tons, or 30 per cent. of the total output of the country. Minnesota is the largest producer of red hematite, followed closely by Michigan, with Alabama third. The iron ores of the Lake Superior region reach their destinations cheaply by means of the long water haul. The total shipments in 1900 were 19,059,393 long tons, over 11,000,000 long tons coming from the three lake ports of Two Harbors and Duluth, in Minnesota, and Escanaba in Michigan. About 2,700,000 tons went to Chicago furnaces and furnaces in Michigan and Wisconsin. Of about 15,800,000 long tons transported to the lower lakes, over 9,600,000 tons were received at the three ports of Ashtabula, Cleveland and Conneaut in Ohio. Only 489,078 tons were forwarded by rail.

In the order of production of iron ores down to less than 500,000 tons the States rank as follows: Michigan, Minnesota, Alabama, Virginia and West Virginia, Pennsylvania, Wisconsin, Tennessee. The total value at the mines of the iron ore produced in 1900 yielded an average of $2.42 per long ton, an increase of $1 per ton, or 70.4 per cent., over the 1899 value of $1.42 per ton. The lowest average value reported per ton was 82 cents, in Texas, where convict labor is used in some mines; the highest was $3.71, in Colorado. The stocks of ore reported on hand at the mines on December 31, 1900, were 60 per cent. over the total of 1899. In 1900 110 mining operations produced 88.3 per cent. of the total output of iron ore. Three of these operations contributed over 1,000,000 each. Of these mining operations 42 are in Michigan, 31 in Minnesota, 10 in Alabama, 6 in Wisconsin, 4 in New York, 3 each in Tennessee, New Jersey and Colorado; 2 in Pennsylvania and 1 each in Georgia and Wyoming.

The total imports of ores in 1900 were 897,801 long tons, valued at $1,303,196, or $1.45 per ton, at the port of shipment, an increase of 33.2 per cent. over 1899. Cuba was the largest foreign contributor, with 444,977 long tons; Spain comes next, and Newfoundland and Labrador third. Of the imports Baltimore received 448,660 tons and Philadelphia 414,064 tons. The exports, chiefly of Lake Superior ores and chiefly to Canada, amounted to 51,460 long tons, valued at $154,756.

Copper.—The production of copper increased 16.59 per cent. over 1899, but the value declined 2.7 per cent. The average price per pound of copper in 1900 was 16.25 cents, against 17.8 cents in 1899 and 11.75 cents in 1898. Some of the leading producers mined less metal than in former years, while other producers largely increased their output. There was great activity in opening old mines and in the development of new properties, but few of them became productive in 1900. This activity was marked in the Lake Superior region, in Montana and in Arizona, the three great copper producing sections of the country, and also in Utah, New Mexico, Wyoming, California, Tennessee and Vermont. The copper exports in 1900 were valued at a little over $58,800,000, as against about $43,500,000 in 1899; the imports were valued at $15,449,779, against $11,054,274 in 1899.

Lead.—The condition of the lead industry in 1900 seemed to be deplorably unsound. The increase was unprecedented, nearly 30 per cent., with an increase in value from nearly $19,000,000 in 1899 to about $23,500,000 in 1900. This sudden rise cannot, however, be regarded as either normal or safe, being the result apparently of consolidation of mines and of artificial stimulation of prices. There is reason to believe that consumption failed to keep pace with increased supply, and that important accumulations of the metal were unmarketed during the year. This is to be deplored. Our lead is produced, 1, from the non-argentiferous ores of Southeastern Missouri; 2, from the zinc-lead mines of the Joplin-Galena district in Southwestern Missouri and Southeastern Kansas; 3, by far the greatest majority of lead is obtained by smelting argentiferous lead ores mined in the Rocky Mountain region. In 1886 imported argentiferous lead ores from Mexico and British Columbia began to furnish considerable amounts of lead. Later on refining in bond of foreign base bullion became an important industry. The market price of lead in 1900 varied rapidly and capriciously, so far as could be seen. From August 27, 1900, to the close of the year it remained at 4⅞ cents per pound.

Zinc.—During 1900 the production of zinc in the United States, 123,886 short tons, declined 4 per cent. in amount and 28.2 per cent. in value, as compared with 1899. The average realized price of zinc ore per short ton in 1900 was $26.50, against $28.50 in 1899 and $28.44 in 1898. There was a large loss in production in Illinois, Indiana and Missouri and a large gain in Kansas. The decline in Illinois was due largely to strikes. The indications are for an increased production in 1901. The exports of zinc in 1900 were $3,450,644, more than double the exports of either 1899 or 1898. Those in a position to know predict that our exports of metal will soon take the place of the present exports of zinc ores.

Gold.—The most important gains in gold production were in the Seward peninsula of Alaska, the Cripple Creek district of Colorado and the territory of Alaska. The Cape Nome beach claims are found where streams empty, or have emptied in times past, into the ocean, bringing gold from the placers above. This general territory, about 350 miles long and 100 miles wide, yielded in 1900 $5,100,000 in gold. Colorado gained $2,846,600 over 1899, the Cripple Creek district supplying nearly the whole gain. The reserves in sight in this district are enormous. The tendency to consolidate in the Cripple Creek properties has been very great. Arizona nearly doubled her production in 1901 over 1899, and the discoveries reported promise a growing future output.

Silver.—The yield of silver in the United States in 1900 shows an increase of nearly 3,000,000 ounces over 1899, and has been exceeded in but three years, 1891, 1892 and 1893. And yet the Director of the Mint assures us that two-thirds of the output of silver in the United States is obtained as a by-product from mines which will be operated, no matter what the price of silver might be. Thus Colorado produced over 20,000,000 ounces, of which 16,000,000 was from lead and copper ores; and Montana produced over 14,000,000 ounces, of which over 11,000,000 ounces were also from lead and copper ores.

Quicksilver.—The production declined in 1900 about $150,000 in value, as compared with 1899. Except 265 flasks from Oregon in 1887 and 1900 and 2800 flasks from Texas in 1899 and 1900, the total production was from California.

Manganese Ores.—The production of manganese ores amounted to 11,771 long tons in 1900, valued at $100,289, the average price per ton being $8.52, against $8.28 in 1899. Virginia and Georgia produced 96 per cent. of the total amount. The bulk of the manganese ores used by the steel companies in 1900 came from foreign countries, Russia, Brazil, India, Turkey, Spain, Chile, &c. Russia was the largest producer and Spain the next. The imports were valued at $2,540,361, or $7.97 per ton, as against $8.41 per ton in 1899. Russia contributed over half of the importation, Brazil and Cuba coming next.

Nickel.—The nickel deposits in Oregon continue to attract attention, and efforts are being made to develop them. Nickel has been found near Sedro and Woolley, in Washington, also near Mt. Idaho, Idaho. This country looks to Sudbury, Ontario, for its supply of nickel, and if the export duty recently authorized by the Canadian Parliament be put in operation it will powerfully stimulate the development of nickel deposits in the United States.

Platinum.—As the result of a thorough examination made by Dr. David T. Day, platinum has been shown to occur in small quantities at many of the placer mines in California and Oregon, and at a few places in Idaho, Montana and Alaska. Chromite is nearly always found associated with platinum, hence it is not improbable that platinum will be found in the basic magnesian formations of California and Oregon, and also of North Carolina, Georgia, Maryland and Pennsylvania.

The Goldschmidt Welding Process.—A modification of Dr. Goldschmidt's thermite process has recently been described by L. Cohn, which should make the method even simpler and more convenient for welding street rails, &c., away from the shop than it was in its original form. A crucible of sheet iron lined with refractory material is used, the bottom of the vessel being constructed of one or more unprotected iron plates. The crucible is carried on a suitable tripod of such design that when the apparatus is in use it stands immediately over the spot where the weld has to be performed. The crucible is charged with thermite, the quantity taken being calculated by the rule that 1 kg. yields 450 grams of molten iron. Over the thermite is laid the igniting mixture, and over that the lid of the crucible, which is an iron plate with a central hole. The ends of the rail are brought together under pressure within a proper mold, and when everything is ready a fusee is applied to the priming. The reaction begins at once, and in a few seconds the charge becomes fluid, melts the unprotected iron bottom of the crucible, falls into the mold, and effects the weld. This modified process is claimed practically to do away with all need for skilled labor, and to be well adapted for the treatment of solid objects of all kinds, such as broken axles, &c.; but it is not suited for the repair or jointing of tubes, as the stream of hot metal is likely to melt a hole in the upper wall of the pipe. It is also suggested that the process would be particularly useful on shipboard for the repair of a broken shaft, since the apparatus is very simple and remarkably compact.

The *Iron and Coal Trades Review* publishes a statement to the effect that there are now being built or rebuilt 70 blast furnaces in Great Britain. Scotland leads with 11, followed by 10 in the South Staffordshire district, and 8 each in the Cleveland and West Cumberland districts.

Modern Plants for the Manufacture of Hoops and Merchant Bars

BY THEO. J. VOLLKOMMER, PITTSBURGH, PA.

The writer does not wish to increase the volume of literature on the large modern iron and steel plants, about which much has been published lately, but confines his remarks to personal observations in plants and mills for the manufacture of light shapes, as hoop and band iron and so-called merchant bar. Only comparatively recently these works have followed the example set by the large plants in introducing improvements, with the tendency to replace manual labor by automatic machinery to reduce the handling of material and to get more and better proportioned machinery.

The savings effected by these improvements in a few large plants will render competition rather difficult for the many small works which operate under many disadvantages, so that the time will arrive when the small mills will either have to follow in remodeling their machinery to enable them to fight for existence in less prosperous times than the present, or be content to gradually drop behind in the race and give up altogether in times of severe competition.

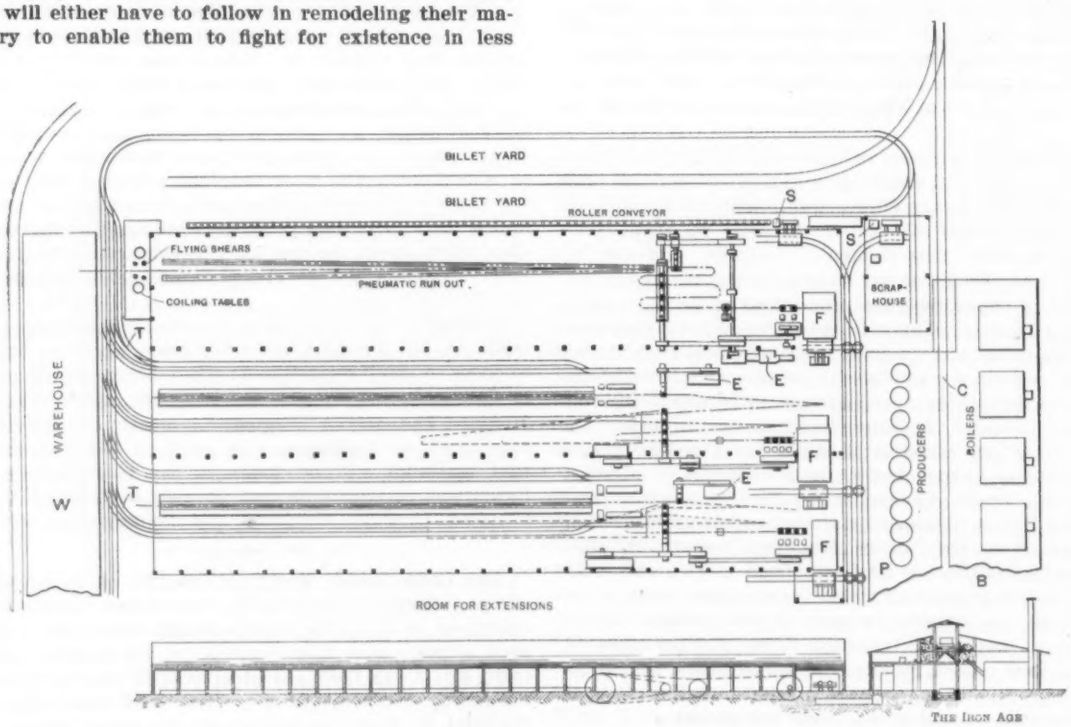


Fig. 1.—Plan of Mill to Roll Hoops or Merchant Bars.

MODERN PLANTS FOR THE MANUFACTURE OF HOOPS AND MERCHANT BARS.

Laying Out of the Plant.

In plotting a plant, it is necessary to keep an eye to possible enlargements of the system in the future, and not to obstruct the ground for future mills with accessory constructions, tracks or substantial buildings. The arrangement should, if possible, allow the independent entrance of tracks to the receiving end and to the delivery end of the plant. Generally a rectangular system of buildings and parallel tracks will utilize the ground most economically. Contrary to the general opinion, the writer considers a slightly rising ground desirable; coal and billets can then be brought in on the higher receiving tracks, the materials can be handled downward, assisted by gravity, more easily than on level ground and the finished product can be shipped from the lower string of tracks.

If the available ground and capital allow it, an arrangement similar to the one in Fig. 1 will prove very convenient. At one side of the coaling track O the boiler house B, at the other side the producer house P, can be placed. For a small plant the track can be raised to a certain extent to secure greater convenience in dumping or unloading coal and greater storage capacity. For larger plants a coal dump, with chain elevators and conveyors to distributing tanks in front of the boilers and producers, will be preferable. The space between the fork formed by the receiving and shipping tracks can be used to great advantage as a billet yard, Y, and can be provided with side tracks. One or two shears, S, for cutting the billets to shorter lengths, will naturally join the billet yard Y, which is connected with the furnaces F by a double narrow gauge track, with switches to every furnace.

Narrow gauge tracks, T, convey the finished and cut bars or bundles to the warehouse W, to be stored or to be directly loaded for shipment. The machine shop, carpenter and smith shop, roll turning shop, scrap house, storeroom, oil and paint cellar and similar structures should be located convenient to the mills, and at the same time out of the way of extensions. Generally conditions do not allow such convenient arrangement, and the lack of available ground, the existence of mills already in operation and other special features sometimes offer quite difficult problems.

Billet Supply.

The size of billets to be selected depends on too many influencing factors to allow of the treatment of the subject here. Generally, it is desirable to use as few different sizes as possible. The relative market price of larger and smaller billets is the deciding point in the selection of the size of billets for mills to be designed. The length of the billets, too, is subject to many considerations. It is generally convenient to buy lighter size billets, up to about 2 inches, in stock lengths, about 30 feet, and to cut them to suit the different furnaces. Billets of different chemical composition should be stored separately to avoid mixing them up. Natural (unsheared) ends and ends cut with improperly prepared shear knives are frequently split to some extent. This crack is liable to widen into a fork during rolling and to prove very annoying, especially in continuous stands.

The storing and handling of billets is still a sore point with many mills. Automatic unloading devices have been tried, but the cost of machinery and the attention precludes their use, except under especially favorable conditions. Well arranged skids, especially if the ground or the arrangement allows them to be inclined, with a string of power driven rollers to the shears, will

prove generally satisfactory, Fig. 2. For short and chunky billets and slabs a short swing crane, or better, a self propelling track crane, if possible with magnetic grip, will prove servicable. Close to the shears should be located a platform scale with narrow gauge track, so that the cut billets can be weighed on the buggy while being loaded. It is desirable to keep the buggies all of the same size, or at least of one hight, so that all buggies can be used at all furnaces. In this case a number of buggies can be loaded for one furnace before changing the gauge of the shears or drawing from another billet pile. A slight inclination of the track downward

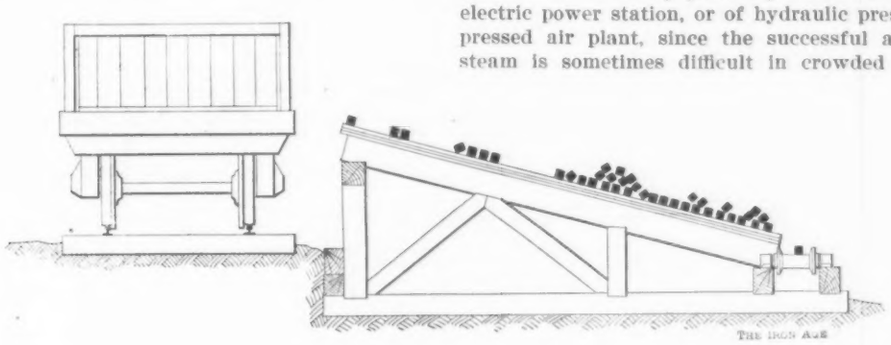


Fig. 2.—Skid for Unloading Billets.

to the furnaces will be greatly appreciated by the yardmen.

Boilers, Engines and Power.

The steam consumption of a plant of this description is rather regular. For this reason the boilers do not require a large water volume. Plain cylindrical boilers have been generally abandoned, and water tube safety boilers have been lately adopted to a large extent. The quality of the feed water will determine the style best adapted to the purpose, but any good type of boiler will answer. Under average conditions, according to the efficiency of the mills and steam plant, 15 to 20 horsepower for each ton of product per day will generally be required as boiler capacity. This includes all the power for shearing, conveying and the driving of all machin-

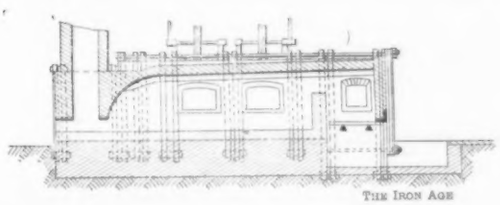


Fig. 3.—Coal Fired Heating Furnace.

ery likely to be used in a mill. Formerly a part of this power was generally drawn from boilers above the heating furnaces, but with the use of well designed continuous furnaces the heat is so well utilized by heating the billets and preheating the air that it does not pay to get steam from this source. The boilers work under and are subject to the same conditions as ordinary stationary boilers.

Up to recent times a rolling mill engine was generally a crude affair, wasteful of steam and frequently subjected to a treatment that would have ruined any sensitive engine in a short time. The latest mills, however, show modern and well proportioned engines fitted with all devices found in a well equipped steam plant, and the managements endeavor to place them in charge of well trained engineers. Frequently they are of compound type and condensing. With the high boiler pressures established in several modern mills (150 pounds), the saving by means of compounding and condensing need not especially be mentioned. The practice of driving several mills from one engine has been largely abandoned, because each stoppage of one mill, owing to small repairs, stickers, exchanging of guides, &c., caused a loss of time on the other mills. Continuous mills, of course, must be driven from one large power unit; semi-continuous mills are now frequently driven in groups from several engines, and even in Belgian mills the last one or two passes are frequently driven from independent smaller engines. The auxiliary machinery, like shears, conveyors, fans, are now generally provided with independent motors. A new competitor of the steam engine is at present appearing in the shape of the gas engine of large units, and the chances are that it will drive the steam engine slowly out of some mills, especially where high speed is wanted. Almost every new mill has an auxiliary power system in the shape of an electric power station, or of hydraulic pressure or compressed air plant, since the successful application of steam is sometimes difficult in crowded places or in localities exposed to the cold. The writer's experience in planning auxiliary power plants is that they almost invariably were afterward used for a number of other purposes, which were not calculated on at the time of the installation, and they therefore afterward proved too small for the demand. A liberal allowance is recommended for such unforeseen cases in the selection of air compressors, pressure pumps or dynamos.

Producers and Furnaces.

Many furnaces are still fired with coal directly. Almost all new furnaces, however, make use of the advantages offered by heating with gas. The ideal fuel is, of course, natural gas, but as very few works are in a position to enjoy nature's gratuitous gift, most are compelled to rely on coal or artificial gas for fuel. Water gas, the most efficient of the manufactured gases, is too costly to warrant its application in our case, and most modern, especially continuous, furnaces work with producer gas. The writer has heard of several complaints arising from the low efficiency given by certain gas furnaces, and in some instances the dissatisfaction was well founded. The reason rests partly with the furnace construction and lack of intelligent attention, but it is mainly, however, due to the construction and handling of the producers. The writer for a long period has daily analyzed the fuel gases furnished by four different makes of producers, and the irregularity of the gas supply was such that at times it was a matter of surprise that the furnace worked at all. One cause of the trouble was the irregular feeding, the coal being dumped in too large quantities at one time. As a consequence tar products and hydrocarbons were deposited in the flues in the shape of soot at an exasperating rate. Efforts have been made to overcome this evil by automatic feed devices, but in the only case of such an installation that has come to the personal attention of the writer the feed was removed again after a short time, because the device burned out in too short intervals, and because it interfered too much with the operation of breaking up the clinkers. It is probable, however, that similar feeding devices in other places have given better satisfaction.

Another cause responsible for the trouble was the irregular blast and the relative quantities of air and steam. Generally injectors are used on the ground of greater simplicity and efficiency. In the cases under observation the valve regulating the steam supply for the blower (injector) was operated by the furnaceman (heater), who gave more or less blast, according to his judgment. In this instance an increase of steam pres-

sure was not followed by a corresponding increase of air volume; on the contrary, with the valve widest open the air suction was considerably diminished, blowing almost pure steam into the producer. For a few moments, of course, a considerable amount of water gas was generated, but after a short time the coal bed lost its incandescence, and the gas supply fell. Where a large number of producers are co-operating these changes in quantity and composition are, of course, less noticeable, and are liable to balance each other to some extent, but the disturbing effect on heating furnaces where two or three producers only supply one furnace is considerable. Even where many producers discharge into one common flue the changes in the constitution of the gas may be less pronounced, but the total efficiency will be lowered considerably all the same. The writer has designed an apparatus for regulating the relative supply of air and steam in proper ratio, which will avoid this trouble entirely. The formation of clinkers is generally followed by the high percentage of carbon dioxide (burned gas) and sometimes free air in the fuel gas. No effective device has been found yet to prevent the formation of clinkers, and persistent stoking seems to be the only effective remedy.

The different makes of producers show so much similarity of construction that no special make can be recommended as far superior to the competitors. A deep ash bed seems to have a kind of regulating effect. A comparatively low gas space above the coal bed will facilitate stoking; the storage volume lost thereby can be with advantage regained by the use of wider flues; the water seal, so highly praised in other quarters, did not find favor with the laboring men working at it in the mills under observation.

Heating Furnaces.

The plain coal fired furnaces are still frequently in use, but their number is steadily decreasing. They are the best style yet for intermittent running on small job orders, with frequent stoppages caused by changes of rolls or billets, especially where the coal prices are low and the labor cheap. Most of the furnaces of this kind in use have too short a hearth and too large a grate, and a lively combustion takes place long after the flames have passed the last billets. The capacity of these furnaces is very variable, according to construction and firing; generally about 3 to 4 square feet of hearth area are required for each ton of product in 24 hours. Fig. 3 shows a much used style of the plainest construction. This style is very convenient for intermittent running, but utilizes the heat in the hearth space to a very low extent only. In order to save fuel and to better utilize the heat of the combustion gases a recuperative or regenerative system is now frequently applied to absorb the surplus heat from the combustion gases before they reach the stack. The recuperator consists of a number of tubes or channels through which the blast air is conducted, while the combustion gases are brought into close and extensive contact with the walls of these channels. The blast air never flows through the chamber provided for the passage of the combustion gases. This uninterrupted and nonreversible flow of air and gases is the feature of the recuperator which distinguishes it from the regenerator, where the hot combustion gases and the blast air alternately come in contact

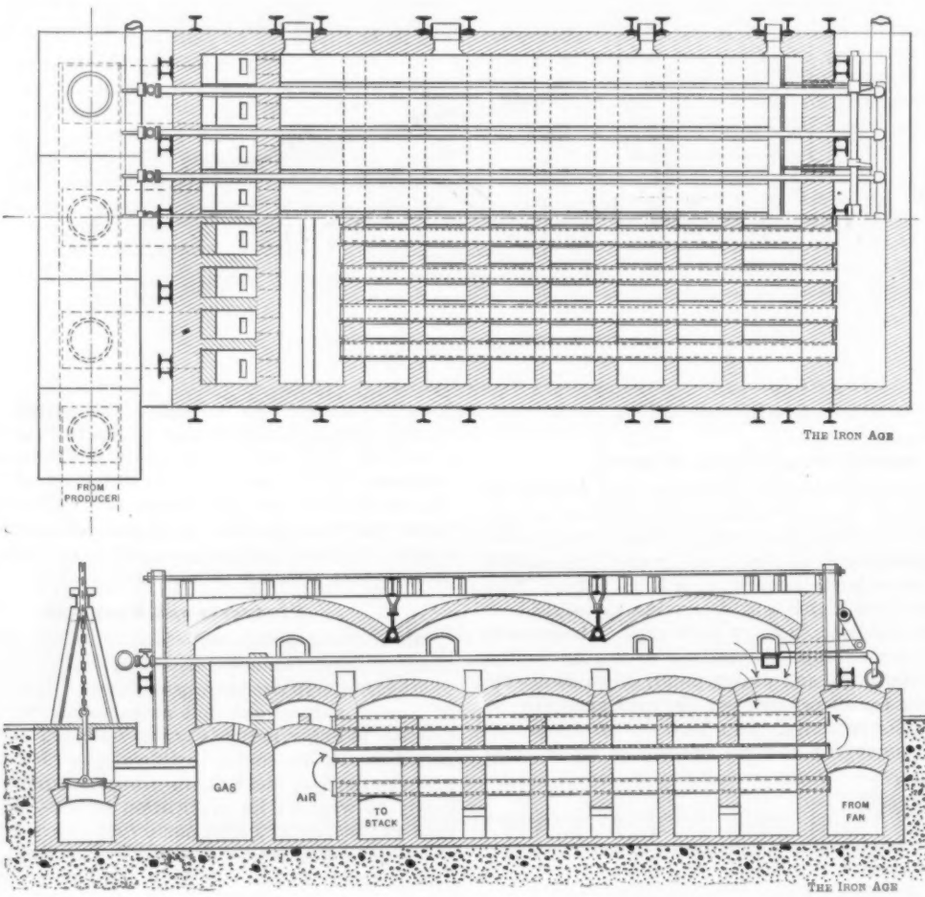


Fig. 4.—Horizontal and Longitudinal Section of Recuperator Heating Furnace.

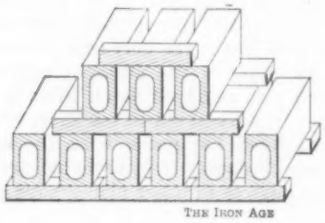


Fig. 5.—Clay Recuperator.

with the surfaces of the same chambers and channels. Both arrangements are recommendable, and are applied to many furnaces. Fig. 4 shows a recuperator (in combination with a gas furnace), a modification of which works very satisfactorily. In this case the furnace was intended only to heat steel billets, which do not require such a high temperature as faggots, and, the flame having to travel all over the billets, most of the heat is absorbed by them before the combustion gases reach the recuperative chamber. Owing to the low temperature of the entering gases cast iron pipes are used for confining and conducting the blast air, the hot combustion

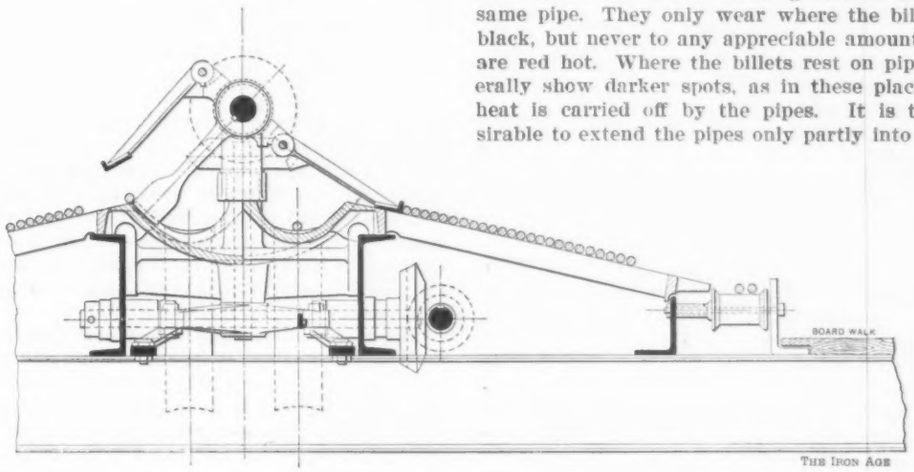


Fig. 6.—Cross Section of Run Out.

gases filling all the remaining space of the chamber, and thus heating the walls of the pipe. A blast temperature of 600 degrees can thus be achieved without injuring the pipes. For other cases, where the temperatures are higher, the walls of the air conduits are better made of clay, hollow tiles similar to those shown in Fig. 5 being used by several builders of successful furnaces. For very high temperatures, as for steel melting furnaces and

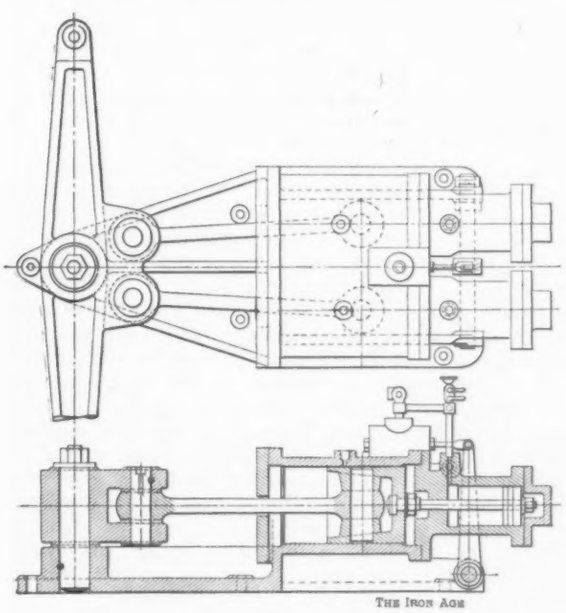


Fig. 7.—Plan and Horizontal Section of Run Out Cylinders.

to some extent for scrap or faggot heating furnaces, where a welding heat is required, regenerator furnaces are preferable, their construction rendering them less liable to burn out the regenerator chambers and checkers than would be the case with the channel system of the recuperators.

The recuperators, while generally not yielding nor endu during such high temperatures as the renegerators, have the advantage of requiring less attention, as there are no valves to be reversed at comparativly short intervals, or to be renewed. As above mentioned, either recuperators or regenerators may be used with periodical or continuous furnaces.

The continuous furnaces are generally provided with a system of water cooled pipes laid at a proper distance, on which the billets slide when the pusher at the feed end moves them nearer to the discharge end. If these pipes can be used without any bends they may be turned about one-sixth of a turn every time the contact surface is worn out and a new wearing surface utilized on the same pipe. They only wear where the billets are still black, but never to any appreciable amount where they are red hot. Where the billets rest on pipes they generally show darker spots, as in these places too much heat is carried off by the pipes. It is therefore desirable to extend the pipes only partly into the furnace, and let the billets slide on the hearth for the last short distance to equalize the heat. Where a large output is expected from a comparatively small hearth the pipes can be raised on blocks, so that part of the combustion gases have to pass also under the billets. It is also desirable, where the floor levels allow it, to incline the hearth toward the discharge end, so as to push the billets downward, in which case, especially for long and light billets, they are not so liable to rise and pile on top of each other. Short billets are best pushed in and out of the furnace through the open ends, while long billets would require such wide charging and discharging openings that it is more desirable to push them in and out lengthwise through small doors, in which case the first set of rolls may be placed directly in front of the discharge door, so as to push them directly between the rolls. The pushers are operated by steam or pressure water.

Proper combustion is the first essential of each good furnace, but it is too complex a question to treat of it here, and the design of high duty furnaces will be best left to experienced parties instead of to the local bricklayer, who frequently is the oracle on furnace questions.

Mills.

The mills up to a short time ago were so-called Belgian mills, with all stands of rolls placed axially on a common bed plate, with long and light rolls, and with many passes in each set. The old mills are characterized by their limited room, only short pieces, 50 to 80 feet long, being rolled, which slide out on the floor, to be dragged, after cooling, to the shears by muscular force. It was a laborious job, in a hot place. The output was small, and the waste from crop ends was considerable. The tendency in the construction of modern mills is to roll at the highest speed, with the least possible loss of time between the pieces, and to roll in pieces as long as they can possibly be handled. It is especially this last item which deserves the greatest attention. If we compare a band mill with a production of 100,000 pounds per shift, rolling pieces 300 feet long at 1000 feet per minute, with a loss of 5 feet on both ends together for scrap ends, and a loss of 5 seconds between the pieces, with a mill running at the same speed and conditions, but rolling only 75 feet long, the former will have 68 per cent. additional product with

the same amount of wages, or labor, and will save 5.46 per cent. of the product, only 1.69 per cent. going into waste, as against 7.15 per cent. in the case of 75-foot lengths. These figures are, of course, extreme, but types of both mills are working. The lengths are also limited by the weight which can be handled without lifting devices at the mills and shears, and the force it takes to drag the pieces, but in the majority of the cases this limit is far off, and can, if needed, be extended by some very simple devices. Large plants can achieve further saving by limiting their mills to a limited range of sizes to avoid too much changing of rolls.

For mass production on long uniform orders the continuous mills take the first place. There are some working on cotton ties and band iron turning out a large product with a small outlay of wages. A number of roll stands are placed tandem style behind each other, the rolls running with increased speed in reversed ratio to the area of the pass. There are only a few passes in each set of rolls, and for band iron the last sets of rolls are plain, without passes, or tongues and grooves. The average rolling mill with a variety of small orders for varying material cannot well afford the outlay for such a mill, and I merely mention them.

In most places, for the large jobbing trade, the semi-continuous or combination mills are most to be recommended. A few continuous stands of rolls for roughing are placed at sufficient distance from the Belgian mill to allow the piece to run out of the roughing rolls before entering the strand rolls. In case of long and light billets, the heater can push them from the furnace directly into the first roughing pass. From the last roughing pass they are guided in a trough to the first pass in the strand or intermediate rolls, where they are pushed through the consecutive passes. Repeaters, such as are frequently used in rod mills, are rarely applied to mills for hoops or merchant bars. Posts securely fastened to the floor plates should protect the catchers against being caught in the loops in case the piece should get stuck in the larger pass. It is also a great convenience to let the loops run out into an underground tunnel, so as to keep the mill floor free from entanglement. This is especially desirable when long pieces are rolled, the loops of which would require too great a floor space. This arrangement is decidely advantageous also on the roller side.

In most modern mills the finishing rolls, and in some even the preceding rolls, are run at increased speeds, frequently by special engines, some mills running the finishing pass at a speed as high as 1000 feet per minute.

Belt drives for light mills at high speeds find increasing favor. Where the mills have to contend with a great variety of small orders the plain Belgian mills will keep the field, if equipped with good conveying and shearing facilities, so that long pieces can be rolled at high speed. The construction and details of the mills I consider of sufficient importance to deserve a special chapter. I merely mention here that the higher speeds coming into use require care in proportioning and fitting up the parts. The couplings, spindles and wobblers especially should be a good fit, and for high speeds they should be machined.

The temperature of finishing is of great importance to the appearance of the finished product. Too high a finishing temperature will cause a thin layer of scale, which will fall off in spots, especially under the strain of bending, and spoil the appearance of the metal. Too low a finishing temperature, on the other hand, will yield a spotty reddish surface, which is very prone to oxidize or rust. A fine black finish is sometimes given by running the finished bars through a box containing cuttings of fiber or leather saturated with tar, the vapors of which will give the metal a thin, uniform and glossy coat. The finishing temperature is of particular importance for metal to be pickled for galvanizing or enameling.

Conveyors and Run Outs.

As the shearing and bundling in modern mills generally require more time than the rolling, special care should be taken to accommodate the shearmen as much as possible. The material should be kept straight, as it has left the mill. This is frequently neglected where the pieces are taken away sideways by hand, and it interferes especially with the practice of shearing several pieces at one stroke of the shears. An advantage is gained by running the pieces from the finishing pass up an incline, from where it is easy to pull even heavy pieces to the shears. Such an inclined run out in operation in a large plant also saves floor space, as several car tracks pass under it at the floor level. Fig. 6 shows a cross section of this run out. There is a running groove on either line of the center line, sufficiently separated to allow a series of posts to stand in the middle. These posts carry the shaft for the throw out fingers, which generally stand in the middle, but can be swung to either side by the action of bevel gears, and vertical shafts, which again are operated by double levers and connecting ropes from a pair of pneumatic cylinders. (See Fig. 7.) The pusher arms rise a small amount whenever a piece is moved out sideways by the fingers, then lower when the fingers move back into the central position, and at the next stroke of the fingers to the other side push the bar down the slope, clamping it between the continuous straightener bar and the pieces pushed down previously, thus keeping them all straight. From the slope the bars pass onto the rollers in the shear run, from where they are pulled to the shears. For flat shapes, as bands and flat bars, the pneumatic conveyor, as described in *The Iron Age* of December 19, has been found the best, owing to its simplicity and its many other advantages. The shear run can be made here also pneumatic, so as to float the bands to the shears with little exertion on the part of the shearman. In several plants stretching devices are used for band iron. When jumping over roller after roller in the run out the bands are liable to have kinks and bends. To take them out both ends are gripped, the head end by a movable vise sliding on and secured to a rack, the tail end by a vise attached to the piston rod of a cylinder, which gives it sufficient pull to make the bands straight. They are then pushed on an inclined cooling bed till they are cool enough for shearing.

Bundling and Shearing.

The band and hoop iron is generally marketed in the shape of long bundles, the handling and straightening of which are rather an undesirable feature in the warehouses of the retailers and manufacturers. This practice is generally being replaced by the method of coiling. There are two kinds of coilers or reels in use. In one case the hoop is reeled around a rotating drum, keeping the inner diameter of the coil of the same size, while the outer diameter varies. In the other the hoop is reeled inside of a circular rim, which fixes the outside diameter of the coil, while the inner diameter is smaller or larger, according to the length and thickness of the band. These coils are far easier to unwind and to handle than the bundles, and find great favor with the users of band iron. Coiling directly from the mill saves the labor of handling the iron on the cooling bed and is particularly recommendable for long material. The coiling should be done at a dark red heat, or blue heat. If coiled too hot, the surface becomes spotted, while the coils will become springy when wound at too low a temperature. Average band iron gets cool enough for reeling when running over an air conveyor for about 12 or 15 seconds, but it requires about a minute for cooling on ordinary roller conveyors. Rounds, squares and other shapes are generally cut to order or stock lengths, and bundled straight.

The hand shearing of single bars or bands is too slow for a fast running mill. Even two shears, one on either side of the cooling bed, scarcely can keep up with the rolling. Some plants, especially for bars, have adopted multiple shears, cutting several bars at one stroke of the knife, and are equipped with automatic feed rollers. For hoop and band iron flying and rotary shears have become favorites. In one large mill all band iron to be sheared is first coiled, then allowed to cool on a slow moving conveyor, and afterward sheared, in order not to hold back the mill if one or more of the

shears should fail. This method entails considerable unnecessary labor. A neat arrangement is to have two reels for each trough of the run out, placed somewhat aside, and two rotary or flying shears nearly in line with the run out troughs—one for actual cutting, the other for reserve and adjustment. By means of simple switches either shear or reel can be used, and if the shears should fail, the bands can be coiled for stock and sheared later, without necessitating the stopping of the mill.

The question whether to roll for stock and supply the customers from the warehouse, or whether to roll to orders only, depends, of course, on many local conditions. Generally, even for smaller plants, the wisest practice is to roll to order, but, before the rolls are changed, to roll a certain amount for stock, ready for immediate delivery. As such orders mostly call for specified lengths, the stock lengths should be ample, to avoid too much waste in shearing. On the other side, such long material is difficult to handle straight. For flat and light material, as hoops or rods, the question has been satisfactorily solved by coiling, but no satisfactory way has been found apparently for stiff shapes and bars.

Proportions and Cost of Concrete Walls.

There appeared in *The Iron Age* of October 3, 1901, a description of the new car shops in course of erection at Elizabethport, N. J., by the Central Railroad of New Jersey. The most noticeable feature in the construction of these buildings was the liberal use of concrete, with but one exception all the walls being of that material. From an article in a recent issue of the *Railroad Gazette* on the same plant we take the following items in regard to the proportions of the concrete and the cost per cubic yard:

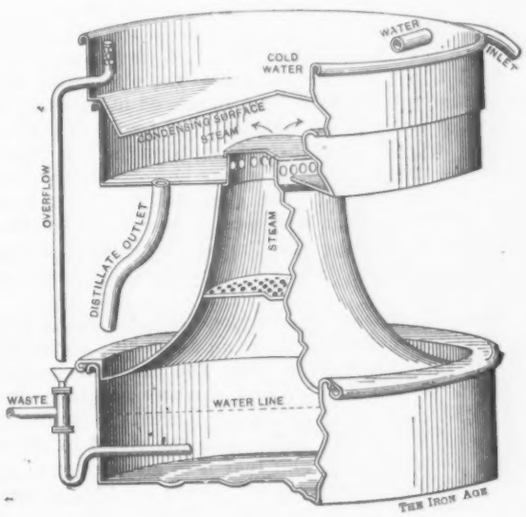
The concrete used in this work was in some cases made with an aggregate of engine cinders, in general with the proportion of 1 part of cement, 3 of Edison sand and 6 of cinders. Gravel aggregate was also used, composed of gravel as it came from the bank, mixed with sand and unscreened. About 1 per cent. was in cobblestones 2 inches in diameter and over, the balance all sizes of gravel and sand to the smallest. When this was employed it was mixed with cement only, the amount of cement used being determined by experiment. In all cases the concrete was mixed very wet, so that no ramming was required. After being deposited it was puddled with a light wooden rammer to secure an even distribution. No attention was paid to the weather, concrete being mixed and deposited in any weather in which the men would work.

When the temperature dropped below 25 degrees all water used was brought nearly to the boiling point and salted, using 1 pound of salt for 18 gallons of water. When the work stopped at night it was covered with canvas between the forms and sprinkled with salt. The forms for the work below ground were of rough hemlock; above ground, of yellow pine painted with soft soap, which gave a smooth surface. No provision was made for expansion and contraction from temperature changes with cinder concrete. This is good practice, but in gravel concrete a joint should be made about once in 150 feet. Some of the concrete was mixed by hand, some of it in mixing machines. Wherever the walls were less than 18 inches thick it was found that hand mixing was more economical, the labor cost for mixing and depositing the concrete being frequently as low as 50 cents per cubic yard. Where the machines were used the cost for mixing was reduced, but the cost for handling and depositing was so much increased as to overbalance it. In general, it may be said for building work that no machine mixer is economical that cannot be transported as easily as a wheelbarrow.

The Federal Boiler & Supply Company.—This company, who filed articles of incorporation in New Jersey on December 13, with $3,500,000 of authorized capital stock in shares of $100, of which $1,000,000 is 7 per cent. preferred, control all the capital stock of the Kellogg-Mackay-Cameron Company of Chicago, the Kewanee Boiler Company of Kewanee, Ill.; the Model Heating Company of Philadelphia, and Uniontown Acme Radiator Company of Uniontown, Pa. The directors are: E. E. Baker, Clarence V. Kellogg, W. H. Pfahler, B. F. Baker, A. C. Mott, J. P. Dugger, James Mackay, W. A. Cameron, E. P. Mott, L. G. McCrum and W. D. Kellogg. The officers are Clarence V. Kellogg, president; W. H. Pfahler, vice-president, and B. F. Baker, treasurer. The separate companies will run independently as heretofore.

The McKenna Automatic Water Still.

The automatic water still designed and manufactured by the McKenna Bros. Brass Company of Pittsburgh is intended for use in chemical laboratories, and also for furnishing pure water for domestic use. The construction of the still will be understood from the engraving, in which a part has been broken away to show the interior. To operate the still, it is placed on a tripod over a Bunsen burner or other suitable source of heat. The water inlet in the top pan is connected by rubber tubing to the water supply and water allowed to run in continuously. When the water reaches the level of the holes in the overflow pipe it runs into the funnel



THE McKENNA AUTOMATIC WATER STILL.

shown at the side and then into the lower pan until this is filled to the level of the small waste pipe shown at the side of the tee. The waste cannot rise higher than this level in the lower pan, since the excess of water is carried off by the waste pipe, which is connected by rubber tubing to the sink. When the gas is lighted steam is formed in the lower pan and rises through the central throat into the condensing chamber, passing through the baffle plate shown in the lower part of the throat and entering the condensing chamber through a ring of small holes about ½ inch above the bottom of the condensing chamber. The steam, striking on the upper surface of the chamber, which is kept cool by the running water, is instantly condensed, and drops to the bottom of the chamber as chemically pure water, whence it runs out through the distillate outlet, which is made of block tin pipe, into a suitable receptacle. As the water boils away from the lower pan, it is automatically replenished, so that the level is kept at the same point and no attention is required.

The still is 11 inches in diameter and 13 inches high. Over a burner using 10 cubic feet of gas an hour it will deliver 3 quarts an hour. It is made of heavy copper spun into shape with no soldered seams. All parts of the still are easily accessible for examination; by lifting off the top pan and then the condensing chamber, which is made in one piece with the central throat, every part of the still is in plain view.

The Millionaire and the Worker in America.

BY STUART UTTLEY, SHEFFIELD, ENGLAND.

On looking over the list of lectures in one of the American technical colleges during my recent visit I was very much interested to find that among the subjects down for discussion were the following: "Labor, the Wrong and the Right," Wealth, from What and for What." This clearly demonstrated to me that in the great educational institutions nothing is taken for granted, and that the relationship and duty of the millionaire to the great mass of the people is being considered and the fierce search light of public opinion thrown upon the methods and policy of the modern exploiters of capital and labor.

It scarcely need be stated that the millionaire is preeminently an American production. The old French saying, that every soldier carried a marshal's *bâton* in his knapsack, might with even greater force be applied to read that in every errand boy in the United States you have a possible millionaire. To a youth of courage, ability, industry, intelligence and audacity all things are possible in this wonderful country. In this respect it is by far the most democratic country in the world. Birth counts for nothing; brains and enterprise are everything.

Of course there are millionaires in the old country, but with few exceptions they are of very slow growth. In the main they either belong to the old landed families, whose estates have been improved in value by the growth of cities or the exigencies of trade, or they are bankers whose forefathers have been in the concern for several generations, or it may be some fortunate individual who has hit upon a specialty. In any case they are few and far between. Now nothing startles a European on visiting the United States more forcibly than the rapidity with which fortunes are made and lost.

There is, indeed, a marvelous hopefulness, a confidence in his country's future, an abounding enthusiasm even in the once wealthy man who has come to grief, which is seldom equaled and nowhere excelled. Whoever else may be doubtful of America's future, the American is not. He looks upon the world in general as the promised land, and that it is his particular mission to go in and possess it. Such confidence means much. When you are entering upon a struggle with the assurance that you are going to win, and are, therefore, nerved to put forth every effort, a most important step has been taken toward victory.

The Almighty Dollar.

From the day you land to the day you leave you are constantly reminded that in America capital is king. You see it in the eager faces of the toiling thousands in the great cities, on the fertile plains and on the homesteads of the far West. You see it in the countless workshops where men are laboring to secure a few more dollars per week. I never imagined that people could be so desperately in earnest as are the Americans. In Great Britain you can find sleepy little hamlets, and even third-rate towns, where people slumber peacefully all through their lives, but I failed to find such in America. Every one is thoroughly wide awake. He struggles to get rich. To a stranger it is interesting to observe the way in which the hunt for the almighty dollar is pursued—up the ladder they must go, however much elbowing, pushing and crowding they may have to do to scale it—and although the great majority cannot become extremely wealthy, still all who contend get a consolation prize sufficient to keep them from want, which cannot be said of all in the old country. Naturally those who get the golden prizes and blossom into millionaires arouse the admiration and envy of the multitude. The fact that they have succeeded where others failed prompts people to think that they either possess exceptional genius or by some subtle powers have wrested from the niggard hand of Fortune their wealth. Hence we find the same reverence paid to the rich man in America as in the old country is paid to a royal prince or successful general.

Obviously in a new progressive country like America nothing can stand still. This is especially true of capital. Trusts are just as naturally a result of its unrestricted growth as the oak is the outcome of the acorn. This latest product of civilization has aroused much attention in Great Britain, and no wonder, as every thoughtful person realizes that in them are to be found the germs of an enormous economic revolution. Hence when in the States my attention was specially drawn to this question, and I have no doubt in my own mind that in the near future it will become the living question of the day, affecting, as it will, the closest interests of humanity at large.

Corners and Trusts.

A couple of years ago, through a corner in American wheat, the price of bread in the United Kingdom was raised from 20 to 25 per cent., and the pinch was felt most severely by those who were the least able to bear it—the working classes and the very poorest section of the people. Then we had corners in cotton and rings in iron, copper, salt and sewing cotton, with the inevitable result of an abnormal increase in price. Thus every one is to an extent familiar with trusts, rings and corners, and from their personal experience dread their extension. In order to get as correct an expression of the public opinion as possible I made a point of questioning a good many people, and the following may be taken as fairly and fully representative of public opinion in the United States The first was an inspector of iron rails and forgings, &c. When I asked him what he thought would be the outcome of all this rage for trusts and combines on the part of big capitalists, he replied: "Well, I take this view of things. Suppose by combination a few already wealthy men succeed in largely increasing their wealth by a monopoly of a certain branch of industry, and in so doing kill off a large number of smaller people in their respective line of business. The nation is the loser. Any one who has at all studied political economy knows that $1,000,000 in the hands of an already wealthy man is not worth near so much to the nation at large as a similar sum would be if earned by a dozen less wealthy persons. On the one hand you have a man who will not and does not require to spend his million on any of the necessities of life, but seeks to invest it in some interest earning undertaking, or is tempted to buy a new race horse or go in for some other extravagance which really confers little or no benefit on the community at large. On the other hand, the smaller men at once put their profits into circulation. They will purchase a larger house, refurnish it and obtain better conditions generally for themselves and families, by which means the money earned is placed into immediate circulation and thus becomes a most powerful factor in creating better trade. The big trusts are also doing all they can to reduce the number of hands required to work a plant, not that competition in this country (America) demands it, but the thirst after the almight dollar appears to have decreed it. In my opinion," he added, "there will at no distant period come a rude awakening." Now this man was an American, with infinite confidence in his country, and being in a position of trust and responsibility and knowing something of the inner workings of the iron trade, his opinion, to my mind, was especially valuable, and from what I was able to gather in conversation with a large number of native Americans there is a strong and growing feeling that the trusts are becoming a serious menace to the best interests of the people, while they invariably declare that they are powerless to stem or delay the deluge.

Workingmen's Opinions.

I also questioned Englishmen and Scotchmen on this matter. Their opinions were unanimously against the trusts. The following expression of opinion is that of an Englishman who has resided for over 40 years in the States. He is now a naturalized American and his present and future is bound up in the land of his adop-

tion. He was, I found, a very clever workman, a reader and a thinker. This man was also representative of a very numerous class. He observed in reply to my questions: "The trusts are already making against the small capitalists and the working classes, as they are all in favor of protection. You may rely upon this, that an American will not be satisfied with a small profit, and having got an idea, will never rest until he has carried it out or spent every cent of his own and everybody else's he can get hold of. That spirit," said he, "will be pushed for all it is worth in these trusts, and when they have collared all the trade here and choked off all the small competitors they will go further afield and spoil British trade Your people will have to wake up, and that right quickly." Having seen how the wheat trust operated a couple of years ago in the United Kingdom I was naturally anxious to ascertain how the American housewife regarded matters, and I certainly found a very strong feeling against trusts; in fact, I was astonished to find how the question had come home to some of them. One good lady, who evidently kept her eyes open, expressed herself with refreshing frankness as to how they affected the home: "Previous to the trust in salt I could obtain three bags of table salt for 10 cents. Now I can only get one for the same money. I could also get a certain quantity of the best coffee for 15 cents. The trust came along and sold the same quantity for 10 cents, until they had run the other coffee dealers out of the field, and now I am compelled to buy trust coffee at 25 cents. If this is a sample of how the trusts are going to deal with the working classes," she continued, "they are going to prove a curse."

I naturally questioned these good people as to how they proposed to alter this state of things. In this respect, however, they were completely at sea. Not one of them expressed the slightest hope of legislation. In this respect they differed naturally from the people of Great Britain. Some years ago, when there was a good deal of cotton cornering at Liverpool, and Lancashire was being seriously handicapped for the want of raw material, the operatives of that county immediately organized an agitation with a view to force Parliament to pass some measure making such corners impossible. Seeing that they were supported by a strong public opinion, there is little doubt that they would have succeeded had not the cotton speculators come to grief and so put an end, for a considerable time at any rate, to cotton corners in Great Britain. So far as that country is concerned one thing is certain: When trusts and combines become so powerful as to seriously affect the food and essential necessaries of the people the latter will speedily bring such pressure to bear upon the Government that strong efforts will be made to checkmate such trade maneuvers.

As already indicated, it appears to me that the public of the United States are very much more at the mercy of combined capital than are the people of Great Britain. Not only is labor better organized in the latter country, but public opinion is fairly well alive to the danger of collossal capitalism, while Parliament is a much more pliant weapon in the hands of the masses than is the American Congress. It is the very helplessness of checking these huge combines which is in my opinion one of the darkest clouds hanging over the United States. The position, indeed, reminds one of the insoluble problem—if a force irresistible comes in contact with a mass immovable what will be the result? But for the prospective peril induced by trusts and combines the future of the American masses appears to me to be more hopeful than that of the working classes of Great Britain and Europe. In those countries the spirit of militarism is becoming most rampant, with its attendant evils of heavy taxation and conscription.

Workingmen's Houses in America.

It was exceedingly gratifying to me to find in the various cities and town I visited quite a large number of British workmen comfortably located in their own freehold house, standing in its own ground, with a good cottage garden attached. The probabilities are that these men, had they remained in the old country, despite all their efforts, would never have possessed a yard of freehold; the best of their efforts might have enabled them to make a little provision for the time when they should be past labor in the way of superannuation from their trade union or friendly society. The land system, coupled with heavy legal expenses, is to a large extent the reason why the British workman has little prospect of attaining to the position of a freeholder like his American cousin.

The abundance and variety of work, freedom from feudal traditions, easy and cheap transfer of land, the ease with which a steady man can secure his own freehold, the way men are allowed by their employers to change from one branch of industry to another, and, withal, the liberal wages paid for all classes of labor, was perfectly astonishing to a visitor from Great Britain. Is it at all surprising that when trade depressions arise in Europe and starvation stares tens of thousands in the face that the cleverest, the most intelligent and the most enterprising workmen should betake themselves to the new world, there to begin life afresh, with no shadow of conscription or class domination hanging over them?

Prizes for Improvements.

Although I have already alluded to the question of patents, I may here illustrate the great incentive which is given to workmen in many of the large establishments. At one of the leading agricultural works I put the question, "How about improvements suggested by workmen. Do you allow them the benefit of them?" "Yes," was the reply. "We have a system of prizes to those who offer suggestions or bring out any new ideas; but all improvements are the property of the firm." This system is also in operation in the farming districts, as every agent offers inducements to the user of agricultural implements to suggest such improvements as present themselves in actual work. This system is common in many other branches of industry. Is it at all surprising that America is the home of mechanical invention? Mechanical inventions all tend in the direction of the subdivision of labor, which I found carried to perfection in many branches of industry. The old fashioned skilled workman is more and more at a discount, for the best brains are now locked up in the machines, and the worker is tied to his machine by the piece work system and has become a simple tender. This system naturally plays into the hands of the trusts. Where, after a little training, one man is as good as another, the independence of labor is sapped and the tendency must certainly be in the direction of reductions in wages. So long as trade is brisk and there is a consequent demand for labor, the full power and influence of the trusts will not be felt, but let a depression in trade set in and threatened reductions in profits compel the leaders of trusts to cast about for the best means of economizing, then the American workmen will realize that they are in the grip of a giant force before which they are powerless, especially in their disorganized condition.

It is always a very difficult matter to forecast what will be the eventual outcome of any great commercial movement like the one now under consideration, hence I will not presume even to guess to what the increasing power of concentrated capitalism will bring the people. It may be that it is but a more advanced stage in national development and that the State will in sheer self defense be compelled to swallow them all. It is well indeed that the American people are level headed and practical. However serious the outlook or threatening the forces, they have faith, courage and ability to overcome them and ultimately turn them to the common good.

Theodore Hiertz & Son of Tenth and Poepping streets, St. Louis, Mo., are sending out circulars calling attention to their several brands of anti-friction metals. It is pointed out that their Nonpareil brand can be used in place of nickel and genuine babbitt metal. Their copper anti-friction is intended for general machine shops and foundry uses.

The Eight-Hour Law for Government Work.

An Effort to Railroad the Bill.

WASHINGTON, D. C., January 14, 1902.—The House Committee on Labor has planned to "railroad" the eight-hour bill through the House, showing but scant courtesy to the important interests involved, and keeping in mind but a single aim, namely, to send the bill to the Senate at the earliest possible date. This decision was reached at a meeting of the committee held on the 9th inst., at which it was also determined to take up the Gardner bill in preference to the measure drafted by Representative Sulzer, and to report it to the House, if possible, without an amendment of any kind whatsoever.

When the committee met on the 9th inst. it was first decided to urge the Gardner bill for enactment, and the subject of hearings on the measure was then taken up. Several members of the committee expressed the opinion that the purpose of representatives of interests opposed to the bill, and of the attorneys representing various branches of the iron and steel trade in particular, was simply to secure as much delay in the House as possible for the purpose of preventing action in the Senate by holding the bill in the Senate Committee. It was stated that the representatives of the labor organizations who were strongly in favor of the passage of the bill would not ask for any time whatever in which to advocate a favorable report, but merely desired to be present at such hearings as might be held.

It was stated further that counsel for the opposing interests were prepared to go into the subject elaborately as heretofore, and it was pointed out that if this should be permitted it would be several months before the bill could be reported. After considerable discussion the committee decided to notify all parties in interest to be present at the meeting to be held on the 16th inst., prepared to present oral or written arguments, with the understanding that the 23d and 30th inst. would also be allowed for the same purpose, discussions to terminate before February 1. The suggestion was made that three days would not be sufficient to hear all who might desire to testify or make arguments concerning the bill, and it was thereupon tentatively decided that if more time was required the committee would devote two days instead of one in each week to hearings, but the determination was emphasized that the discussion should be finally closed before February 1.

The programme adopted by the committee is very satisfactory to counsel for the interests opposed to the bill. Judge J. K. McCammon, representing the Carnegie Steel Company and other interests, referring to the arrangement made by the committee, said to the correspondent of *The Iron Age:*

"It seems incredible that a committee of the House of Representatives would attempt to choke off the discussion of such a measure in the manner proposed. The so-called Gardner bill changes the fundamental law of the land, and would upset industrial conditions throughout the country to an extent that is not even imagined by the advocates of this legislation, and yet it is proposed to report it to the House within a fortnight after taking it up, although but a few hours in each week are given to its consideration. It is not my purpose, or the purpose of any interest I know of, to discuss this bill for the purpose of delaying a report upon it. We are all well aware that certain members of the committee are prepared to send it into the House at a moment's notice, but we feel that this should not be done until we have laid before the committee, and especially before the new members thereof, a statement of the character of the measure and the effect it will have upon the manufacturing industries of the country.

Since the bill was taken up the courts have held similar statutes to be illegal on the ground of unconstitutionality, and we desire to present these facts to the committee in order that its members may not be in the dark as to what they are doing. So far as the iron and steel interests are concerned it is not our purpose to retrace any of the ground we have already covered, but we have witnesses who have not heard before and who wish to present new propositions; for the further we look into this bill the more comprehensive and far reaching its provisions appear. It will certainly be an amazing thing if the committee refuses to hear any reputable witness who desires to speak on this important measure, and I am confident that if such an unwise programme is adopted it will recoil upon its promoters before Congress is through with the subject."

W. L. C.

A Naval Coaling Station for Puget Sound.

On February 15 bids will be received by the Bureau of Yards and Docks, Navy Department, for a coaling plant to be built at the Navy Yard, Puget Sound, Wash.

There are available at the present time appropriations to the amount of $112,500 for the coal shed and appliances and $15,500 for dredging, making a total of $128,000 for which contract can be entered into at present. It is desired to obtain for this amount a plant complete so far as it will permit, and supplied with all the necessary accessories and coaling devices. The plant should be such that it can be easily and economically extended as regards capacity, and bids are invited hereinafter, under the conditions named therein, on such extensions amounting to not more than $72,000, and also $142,000, which will bring up the total cost to either $200,000 or $270,000, depending upon the amount of the additional appropriation granted.

The general plan provides for two coal sheds, each about 85 x 200 feet and 150 feet apart. The wharf is to be extended in front of the coal shed about 50 feet and in the rear about 25 feet. If wood is used for the construction of shed and foundation it must be Douglas fir. No. 22 galvanized corrugated steel is preferred for the roofing.

For a length of 350 feet from the outer end the wharf shall be furnished with an elevated track for movable tower equipped with power shovel and for cableways with coal pockets having a capacity of about 5 tons per linear feet. The inner portion of wharf, measuring 300 feet, shall be occupied by a trestle carrying four lines of cable railway. The wharf shall be 55 feet wide over fenders and have a length of 650 feet.

The objects to be accomplished by the coal handling machinery are:

1. Removing coal from collier or barge lying along either side of the coaling wharf and delivering coal into the coal bins anywhere on the wharf, or into the coal sheds.

2. Removing coal from the coal sheds or from the coal bins on the wharf and delivering into collier or barge along the coaling wharf, either in bulk or in bags.

3. Removing coal from sheds and delivering into standard gauge coal cars of the yard railroad system.

4. Removing coal from the sheds and delivering aboard vessels of the United States Navy, in a convenient manner, either in bulk, bags, buckets or cans.

5. Removing coal from the bottom of the sheds and replacing it in the sheds on the top of the pile where desired.

A New Open Hearth Plant.—Wickwire Brothers of Cortland, N. Y., manufacturers of wire cloth, nettings and wire goods, have purchased 10 acres more of land from the Randall estate, adjoining their property on the east and lying along the south side of the Lehigh Valley Railroad tracks, and are about to further enlarge their plant. The contract has already been let to the Wellman-Seaver Engineering Company of Cleveland, Ohio, for the erection of an open hearth steel plant and a rolling mill, from which will be turned out the steel billets for their own use in drawing wire such as they now purchase elsewhere. The plans are all prepared and work will begin as soon as the frost is out of the ground in the spring. It is expected that the plant will be completed and be ready for operation by September 1.

Another Enormous Eye Bar Machine.

In *The Iron Age* of December 6, 1901, mention was made of an eye bar machine to be built by the Bethlehem Steel Company for the American Bridge Company. It will be capable of making 16-inch eye bars. The Bridge Company have the contract for the Wabash bridges over the Monongahela and Ohio rivers, which require 14-inch eye bars with a 32-inch head, hence the necessity for the new machine.

ANOTHER ENORMOUS EYE BAR MACHINE.

We have received the following communication from the Phœnix Iron Company of Philadelphia:

"It will no doubt be interesting to the users of eye bars to know that the Phœnix Iron Company of Philadelphia have already the capacity to manufacture eye bars exceeding the dimensions above stated, and have actually made and tested 15 x 2 inch bars with 32-inch heads. These bars were forged October 6, 1901, for the cantilever span of the Quebec Bridge. The accompanying engraving shows one-half of one of these bars after it had been tested.

"The bars tested were of original section, 15 x 2 inch, diameter of pin hole, 12 inches, and the test resulted as follows: Elastic limit, 28,000 pounds per square inch; ultimate strength, 50,160 pounds per square inch; elongation in 12 inches, 49 per cent.: elongation in 8 feet, 25.63 per cent.; elongation of pin hole, 17.26 inches; reduction of area at fracture, 52.9 per cent.; fracture silky cup."

The company's machine for testing these bars has a capacity of 2,160,000 pounds.

Shenango Valley Notes.

NEW CASTLE, PA., January 13, 1902.—The year 1901 was the most active in all respects of any year in the history of the iron interests of the Shenango Valley. The output has been very large at all the plants and the demand has kept stocks from accumulating. Improvements have been made on an extensive scale at a majority of the plants, and those projected for 1902 are even more extensive than the improvements made in 1901. In New Castle alone three new iron concerns have been organized and new buildings erected. Sharon has been fully as active and there have been important improvements on the Sharpsville, Greenville and Wheatland plants. Orders for 1902 are plentiful all along the Valley and the outlook for a prosperous winter and spring could scarcely be brighter. The feeling of confidence is general in the Valley towns, and all business is keeping pace with the improvements and activity of the iron plants. The by-product coke plant of the Sharon Steel Company will be erected at South Sharon. The company are still surveying for their 13-mile railroad from South Sharon to the Plain Grove coal and limestone fields. Mining has begun at three different shafts on an extensive scale. The Pennsylvania lines have already built a 10-mile extension to the coal mines and limestone quarries. If there is a road built by the steel company, the region will have access to three lines, the Bessemer, Pennsylvania, and Sharon Steel Company's Railroad.

The Universal Sanitary Ware Company of New Castle will at once double their capacity, necessitating enlarged buildings and much new machinery. The New Castle Stamping Company and the New Castle Forge & Bolt Company are proceeding rapidly with the erection of the buildings for their new plant.

New Electric Furnace Company.—The Electric Furnace Company, 52 William street, New York City, who recently organized with a capital of $200,000, will erect several plants in the South and West for the production of steel ingots direct from ore by an electric process invented by M. R. Conley of Brooklyn, N. Y. The company have secured from the Watuga Land Company the water rights in the Watuga River and a large tract of land near Elizabethton, Tenn., where they will shortly commence the erection of two or three electric furnaces and an 8000 horse-power electric plant. Through a subsidiary company, who will incorporate under the name of the Electric Crucible Company with a capital stock of $500,000, the furnaces are to be placed on the market for use in foundries and machine shops. These at first will be manufactured by contract, but later it is the intention of the promoters to erect a plant. The parent company are at present building a small furnace in the vicinity of New York City, which they expect to have completed and in operation within the next two or three weeks, when it will be placed on exhibition and the process explained to all those interested. The officers of the Electric Furnace Company are M. R. Conley, president, and Thomas T. Seelye, treasurer. W. B. Hutchinson is attorney.

The employees of the Penn Bridge Company, at Beaver Falls, Pa., have organized the Penn Bridge Works Relief Association with 200 members. The members will receive benefits in case of sickness, accidents or death.

The Department of Commerce.

WASHINGTON, D. C., January 14, 1902.—An important step was taken on the 9th inst. in the movement now on foot to secure the establishment of a new Department of Commerce, which was described in *The Iron Age* last week. Senator Nelson, the author of the pending bill providing for the proposed department, brought the measure before the Committee on Commerce at its regular meeting, and after a brief discussion he was authorized to report it favorably to the Senate. A favorable report was filed later on the same day and Senator Nelson will call the measure up for consideration by the Senate within the next fortnight.

The bill as reported from the Commerce Committee contains an important amendment, which provides as follows:

"Section 10. That all power and authority, heretofore possessed or exercised by the head of any executive department over any bureau, office, branch or division of the public service, by this act transferred to the Department of Commerce, or any business arising therefrom or pertaining thereto, whether of an appellate or revisory character, or otherwise, shall hereafter be vested in and exercised by the head of the said Department of Commerce. And all acts, or parts of acts, inconsistent with this act, are, so far as so inconsistent, hereby repealed."

The purpose of this amendment is to vest in the new department appellate jurisdiction over all matters that may be pending in the various bureaus on the date on which they are transferred to the Department of Commerce. Without such a provision the head of the department would lack authority to regulate the bureaus, and appeals from the decision of bureau chiefs would lie, as heretofore, to the heads of the various departments to which the bureaus were formerly attached.

What Other Countries Are Doing.

In his favorable report upon the bill establishing the new department Senator Nelson points out with much force the necessity of keeping abreast of the leading countries of the world in providing Government aid for the development of our commerce and industries. On this point he says:

"The fact is now, and has for many years been, recognized by all the principal commercial bodies throughout the country, and there seems to be an urgent demand throughout the industrial world for such a department. Most of the other great governments of the world have a department of this kind. England has her Board of Trade, France her Minister of Commerce, Industry and Telegraphs; the Netherlands a Minister of Public Works and Commerce; Austria-Hungary, a Minister of Commerce and National Industry; Italy, a Minister of Commerce, Industry and Agriculture; Spain, a Minister of Commerce, Agriculture and Public Works; Portugal, a Minister of Public Works and Industry, and Russia has just established a Ministry of Commerce and Industry instead of having it, as heretofore, a branch of the Finance Ministry. In all these governments the fact is recognized that a department of this kind is essential and necessary for the care, promotion and development of commerce and manufactures. The United States, in order to be on a footing of equality and in order to be fully equipped to enter the competitive field with the strongest nations, ought to take a lesson from and be guided by these examples.

"In order to make such a department comprehensive and effective, and in order to fully equip it with all the necessary appliances to execute its great task and purpose, it ought to be vested with all branches and departments of the public service relating and germane to the subject of commerce, manufactures and other industries.

"It is apparent that none of these branches of the public service have any immediate or direct connection with, or are germane to, the principal and most important duties of the Treasury Department. This Department stands charged, chiefly and first of all, with the financial and fiscal affairs of the Government, with all that pertains to finance and revenue, and ought not to be charged with duties foreign to these subjects. These other branches of the public service, which lie outside of the subject of finance and revenue, pertain more directly to the subject of commerce, manufactures and other industries.

"It is also to be noted in this connection that in none of the departments of the Government have we any bureau or division of the public service to which is committed the supervision of the manufacturing and mining industries of the country—two very important branches of our industrial life. In view of our great progress and development in manufacturing industries, which now far exceed the ability to supply our wants, and in view of the urgent necessity of securing more extensive markets abroad, it must be apparent to any one who gives the subject the least thought that there is an urgent demand for the establishment of a department of the service to have the charge of and to aid in our industrial development, and to secure us better and more extensive markets abroad."

A Slight Expense.

A notable feature of Senator Nelson's bill is the fact that the establishment of the new department will make but a very slight increase in the annual expenditure for its maintenance. On this point he says:

"The salaries of the officers and employees of the several bureaus, departments and branches of the public service thus transferred to the new department remain unchanged. The bill increases the salary roll only to the extent of $8000 for the Secretary, $4000 for the Assistant Secretary and $3000 for the Bureau of Manufactures. In all $15,000.

"In addition to this it will be necessary to make appropriation for a limited clerical force in the Bureau of Manufactures, and perhaps a few additional clerks in the Bureau of Geological Survey and Mining Industries, and a few clerks in the Secretary's office. The aggregate increase for salaries is not likely to exceed the sum of from $40,000 to $50,000 a year. Most, if not all, of the bureaus, departments and divisions transferred can occupy the quarters and offices they are now occupying, and it is believed that ample quarters can be found for the Secretary and Assistant Secretary and their immediate employees, and the Bureau of Manufactures in the old Post Office Department building, so that there will be no immediate necessity for the construction of a new department building. The expenses involved in establishing this new department will be insignificant in comparison with the great work to be done and the great results that can be obtained."

Senator Nelson is very sanguine that his measure will pass the Senate within the next 30 days. It is his purpose to call it up for consideration before the calendar becomes crowded with measures reported from other committees, and he hopes that a vote can be secured without extended debate.

"Our committee are so firmly convinced," said he to the correspondent of *The Iron Age*, "that there is an urgent demand and an urgent necessity for the establishment of this new department, and that this fact is well understood in the Senate, that but little discussion will be required to explain the purpose and effect of the measure. I shall need but a few minutes for this purpose, and I shall seek an opportunity to bring the bill forward within the next fortnight. I have no doubt of the ultimate action by the Senate, and I am very hopeful that the House will recognize the importance, not only of passing the bill, but of putting it through promptly. There need be no confusion in transferring the various bureaus which are to be gathered into the new department, but it is obvious that the pendency of this bill may create a feeling of uncertainty in the minds of department officials, and it is therefore highly desirable that the bill should become a law without delay or extended discussion."

The question as to the possible expansion of the functions of the Department of Commerce to include the work of the projected reciprocity commission will probably be decided either in the House or in conference committee, if the bill passes both Houses. It is believed it would be a mistake to attempt to incorporate

this feature in the bill before its passage in the Senate for the reason that the status of the pending reciprocity treaties has not yet been determined. Action was taken by the Foreign Relations Committee during the past week with the view to determining the fate of these treaties, and it is believed they will be disposed of in some way within the next few weeks. The question having been raised as to whether the treaties have been legally extended and therefore are still alive, was raised by Chairman Cullom and referred to a sub-committee for investigation and report. The Dingley act, under which they were negotiated, provided that "whenever the President of the United States, by and with the advice and consent of the Senate, with a view to securing reciprocal trade with foreign countries, shall, within the period of two years from and after the passage of this act, enter into commercial treaty or treaties with any other country or countries," &c., and the question has therefore arisen as to whether treaties not ratified within the two years' period mentioned may still be regarded as pending. It also appears that the extension of these treaties when they have expired from time to time has been effected by the exchange of memoranda between the signatory powers, and that certain of these memoranda, which have the force of treaties, have not been acted upon by the Senate. It is, therefore, within the range of possibility that the Foreign Relations Committee may hold that all the reciprocity treaties are dead, and require no further action to finally dispose of them. If it is decided that they are still pending, Senator Cullom will move that they be reported to the Senate favorably or adversely at an early meeting of the committee.

W. L. C.

Central Pennsylvania News.

HARRISBURG, PA., January 14, 1902.—The mills in this part of the State are recovering from the car and coal shortage and a number of furnaces and works have resumed operations. Harrisburg works, being located on the main line of the Pennsylvania, did not feel the scarcity of coal to the extent of closing down, although some mills were restricted in their operations.

The Lebanon Boiler Works are said to be preparing for an addition.

The Lucknow Forge, near Harrisburg, has suspended operations. The forge has been running lately on charcoal blooms.

The Pennsylvania Steel Company have been awarded the contract for the bridges to be built over the Schuylkill by the Pennsylvania Railroad Company in Philadelphia. There will be two bridges and some structural work.

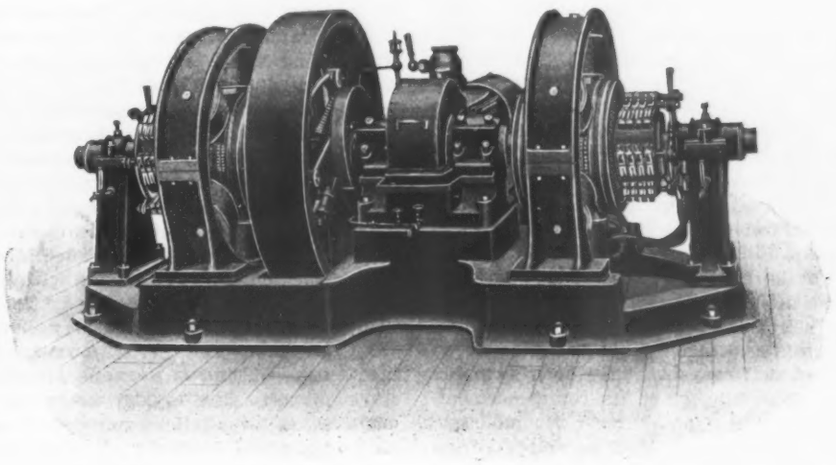
Two batteries of 70 coke ovens each have been completed at the Lackawanna Steel Company's Colebrook plant. Two more are to be constructed.

The Lebanon Valley Furnace, at Lebanon, will be blown in soon. It has been idle since November 22 for repairs.

The Stoever Foundry & Mfg. Company of Myerstown have elected J. H. Killinger as president and M. H. Treadwell as secretary. The Union Boiler Works of Lebanon elected Thomas H. Capp as president and Henry T. Richards as superintendent.

Buffalo Forge Engine with Direct Connected Generators.

The accompanying engraving shows a new design, by the Buffalo Forge Company of Buffalo, N. Y., of their engine direct connected with two generators. This arrangement is especially adapted to the three-wire system, which is so steadily taking the place of the old two-wire system. The engine and the two generators are bolted to the same heavy cast iron base. The engine bed is bolted near the center of the base, while on either side is the field frame of the dynamos, and on either side of these frames are bolted the outboard bearings. The latter help to support the main shaft, upon which is placed the heavy fly wheel, near the bearings of the engine proper. In a corresponding position on the other side of the engine frame is one of the armatures, while the other armature is placed on the opposite side of the fly wheel.



BUFFALO FORGE ENGINE WITH DIRECT CONNECTED GENERATORS.

The cylinders of this engine are provided with a dead air insulating space by means of a polished sheet of metal which incloses the air. The piston is extremely light, so that the wear upon the upper half of the cylinder is hardly less than that upon the lower.

The crank shaft is a single forging of open hearth steel, to which is fastened the counterbalancing crank disk, which reduces the vibrating and shaking forces to a minimum. The connecting rod is of forged steel and has a cross head end to receive a bronze box, which may be adjusted by means of a wedge and two screws. The crank end is of the locomotive strap type, in which are the cast iron boxes lined with babbit metal, and provided with two screws to regulate the adjusting wedge. The valve motion is obtained from an eccentric controlled by a shaft governor. The governor may be adjusted by shifting the weight, by changing the tension of the spring, or by means of the dash pot.

One point of design is the ease with which the armature, commutator and brushes of each dynamo may be reached, as the commutator of each armature is placed near the outboard bearing. The crank shaft and connecting rod are inclosed and run in oil, while the wrist pin bearing is furnished with a lipped cup, which catches up the oil and delivers it to the bearing surface. The outboard bearings are of the adjustable ring oiling and self aligning type.

Lake Mining Matters.

DULUTH, MINN., January 11, 1902.—A very serious cave in occurred at the Negaunee Mine, one of the United States Steel Corporation's legacies from the American Steel & Wire Company, last week. Nine men were intombed and are undoubtedly long since dead. This cave in was in the old part of the mine, which has been coming down gradually for several months. Last summer the engine house went in and all the machinery had to be moved to a new location. Now the dryhouse and other buildings are going down. The cave is in the old mine and does not affect that part reached by the shaft sunk last year. There are several other mines where troubles have occurred of late, among them the Brotherton and the Newport, which have been suffering from very serious fires.

New Mesaba Mines.

Some important new properties are to be opened on the Mesaba range during this winter, to be ready for a considerable output the coming summer. Preliminary estimates for the shipment of the year put the Mesaba range total at something like 1,000,000 tons higher than the figures of 1901. Indeed, if all is shipped that some of the outside mining men claim they will move, it will be several million tons greater than before, but there is no probability that some of them will be able to do what they now claim. The United States Steel Corporation will open the East Pillsbury, a lease to the Lake Superior Consolidated Iron Mines from J. S. Pillsbury and others, under which the output is 100,000 tons a year at a 25-cent royalty. This is the east half of the southeast quarter and the southeast quarter of the northeast quarter of section 29 T 58 R 20, and fills the gap between the Pillsbury fee mine on the west and the Clark Mine of the American Mining Company on the east. The ore body is generally supposed to be continuous through the three properties. The East Pillsbury will probably be worked in connection with the Pillsbury fee, but no name has yet been given the new property. The same big corporation will have their Burt Mine, at Hibbing, stripped, and a very important contract for the work has been given Winston Bros. & Dear, who have been stripping contractors at the Mahoning since its commencement. This contract will require a long time for completion, and it is intended that some ore shall be shipped from the open pit this year. While the Donora Mining Company, a Union Steel subcorporation, have yet made no move toward stripping their new property in section 3 T 57 R 21, it is probable that some ore will be shipped the coming season. The Oliver-Snyder Mining Company, whose valuable mine in section 22 T 58 R 20 is now being opened, will make as heavy a shipment the coming season as consistent. The shaft is now down about 65 feet and is in a quicksand that is delaying operations. There is a fine and large ore body here that will make this one of the important mines of the range, both in quantity and quality. This mine will be operated for the Oliver-Snyder Works and will be in harmony with the United States Steel Corporation. The Pitt Iron Company have taken a lease of 160 acres in sections 2 and 11 T 57 R 21, joining one of the unopened Mahoning deposits, and will open a mine shortly. The land belongs in fee to Jas. J. Hill, and the lease carries the provision that if the rail freight to Lake Superior is reduced by State or other initiative, the royalty shall be correspondingly increased. As the royalty and freights are both paid to the same people, the personal interests of Jas. J. Hill and associates, this puts the lessees in a position where they will have no incentive to secure lower freights. The annual minimum here is 50,000 tons, at a 20-cent royalty, but as the output increases the royalty drops, until, with an annual output of over 500,000 tons, the royalty is but 12½ cents. The lease is, in its essentials, similar to that between the same lessors and Corrigan, McKinney & Co. on the Stevenson, and is given on the same consideration—namely, the turning over to the Hill railroad of the haul on other lands in the control of the same lessee. Alexander Maitland, mining manager for the Republic Iron & Steel Company, has taken a lease upon lands in the northeast corner of section 7 T 57 R 17, south of the Fayal Mine, where some ore was found by explorations carried on early last year. The Republic Company are now sinking a shaft in section 14 T 58 R 19, where they have secured a lease from the Hill interests. Some mining will probably be carried on here during the coming season, but it will be on a small scale. The same company are preparing to open the Pettit Mine, in section 24 T 58 R 17, secured by them last year, and will probably make a considerable shipment this season. The operations of the United States Steel Corporation, preliminary to opening the Stevens Mine in section 26 T 59 R 15, have been already noted. It may be that no ore will be shipped from that property until later. Still another mine to be opened on the Mesaba range during the present year will be the Minorca, owned by the Hobart Iron Company, a Pickands, Mather & Co. company, and located in sections 4 and 5 T 58 R 17. Two shafts are already under way there. Mention of the work of Jones & Laughlins, Limited, has also been made. They are opening the Lincoln and have an exploratory shaft in ore at the Grant. They will make shipment from the former this year.

Marquette Range.

On the Marquette range the Lake Angeline Mine will mine this season a tonnage of silicious ores from their East Mine. This ore, of which the company have an immense quantity at the East and Mitchell locations, will be valuable to use with their new Mesaba ores. At the East New York they have just ordered a 15-drill compressor and will push the mine faster than before. It is looking better as the openings extend. Deep drilling is being carried on near Republic, said by the local people to be for the Clergue interests, and a hole is now down more than 1000 feet. It was carried to that depth by B rods and then changed to E for continuance downward. Cole & McDonald are doing the work.

In preparing for their Negaunee Mine, the Cleveland Cliffs Iron Company are moving with great caution, and every step is carefully watched. The machinery and equipment being placed is heavy enough to carry on work for years. The Oliver Iron Mining Company have filed a lease of land at Negaunee, including the old race track property, the royalty being on the basis of 15 cents a ton for all Bessemer ore running over 58 per cent. iron and 7 cents for all other merchantable ores. The Bessemer qualifications is one part to one thousand. It is expected that a mine will be opened here.

It is stated by the Wisconsin Central Road that the delay in getting long timber from the Pacific Coast has compelled the abandonment of the plan for rebuilding the road's ore dock at Ashland, as no timber can be had in time to make the improvement before May, when shipping must commence. During the coming season timber will be brought in and the dock will be torn down and completely rebuilt, raised to accommodate the largest ships, and enlarged for the business of 1903.

The Eastern Minnesota Road is replacing its lighter ore hauling locomotives by much heavier engines, and expects, it is now claimed, to haul to Lake Superior during the coming season at least 3,000,000 tons of ore. It has the big Mahoning and Stevenson, as well as several smaller mines, to draw upon, and a few of the mines now belonging to the United States Steel Corporation have been shippers over this road. The company's road is being materially improved for the expected business and a long and costly steel bridge is going up at the crossing of the St. Louis River. At this point large yards will be built and the ore trains will be made up here and taken down to the dock by switch engines. The distance is about 25 miles. D. E. W.

The estimate of requirements for the coming year in the State of Victoria is much heavier than usual. The Railway Loan Appropriation bill is now before Parliament, and some of the items therein should cause added business to some of your American makers. Sundry extracts are as follows: New engines, £247,000; new wagons, £246,000; new railway carriages, £308,000; Westinghouse brakes, £69,000; new rails, £46,450; chain an-

nealing and testing plant, £1750; iron rolling mills and dog spike machinery, £5000, &c. Station improvements, with their innumerable details of hardware requirements, run into a great many thousands.

The American Stove Company.

A Consolidation of Makers of Gasoline and Oil Stoves and Gas Stoves.

A new consolidation perfected the past week includes nine companies, constituting the most important manufacturers of gasoline and oil stoves and gas stoves and appliances. The consolidation bear the name of the American Stove Company, were chartered under the laws of New Jersey on December 24 last, and began business January 6. The companies included in this consolidation are as follows:

Ringen Stove Company, St. Louis.
Quick Meal Stove Company, St. Louis.
George M. Clark & Co., Chicago.
Schneider & Trenkamp Company, Cleveland.
Standard Lighting Company, Cleveland.
Dangler Stove & Mfg. Company, Cleveland.
National Vapor Stove & Mfg. Company, Lorain, Ohio.
Monarch Stove & Mfg. Company, Mansfield, Ohio.
Twin Burner Vapor Stove Company, St. Louis.

It had been known for many months that negotiations were proceeding for the consolidation of these interests into one company, but obstacles of various kinds were encountered from time to time, and it would frequently appear as though it was impossible to adopt a plan on which all could be brought together. The announcement of the consummation of the scheme, therefore, comes as a surprise to the vapor, oil and gas stove trade. The negotiations were completed the past week under the direction of Ritcher, Montgomery & Hart, lawyers, of Chicago.

The new company will include, as above stated, the leading companies engaged in the manufacture of vapor, oil and gas stoves. This consolidation, however, will not be a monopoly, as several good sized manufacturing establishments engaged in the production of vapor stoves will continue to operate independently. In the oil stove business are also to be found some important independent manufacturers. The gas stove trade presents a still wider field, as the manufacturers in this line are much more numerous, including quite a large number of manufacturers of coal stoves who are also engaged in the production of gas stoves and ranges. The purpose of the new company, therefore, is not to endeavor to monopolize any branch of the stove trade, but to secure economies in the marketing and delivery of their products which will enable those interested in the company to secure better returns on their investment. They have for a long time been suffering from competition with one another in the cheaper classes of stoves, which are used most extensively. The prices of such stoves have been frequently down to cost or even below it, and it is expected that hereafter a basis of better prices can be maintained.

The new company will also be an important factor in the steel trade, as several of the constituent companies have been prominent in the manufacture of steel ranges and will continue to produce this class of goods. All the constitutent companies have transferred their entire properties to the American Stove Company, including their steel range business.

The officers of the American Stove Company are as follows:

President, C. A. Stockstrom, St. Louis.
First vice-president, George M. Clark, Chicago.
Second vice-president, D. A. Dangler, Cleveland.
Third vice-president, F. L. Alcott, Cleveland.
Secretary, H. J. Trenkamp, Cleveland.
Treasurer, George F. Fiske, Chicago.

The Executive Committee is as follows:

C. A. Stockstrom, St. Louis.
F. L. Alcott, Cleveland.
George M. Clark, Chicago.
H. J. Trenkamp, Cleveland.
D. A. Dangler, Cleveland.
E. H. Stockstrom, St. Louis.
Geo. F. Fiske, Chicago.

The Board of Directors is as follows:

C. A. Stockstrom, St. Louis.
John Ringen, St. Louis.
Louis Stockstrom, St. Louis.
E. H. Stockstrom, St. Louis.
George M. Clark, Chicago.
George F. Fiske, Chicago.
Paul Schneider, Cleveland.
Henry Trenkamp, Cleveland.
H. J. Trenkamp, Cleveland.
F. L. Alcott, Cleveland.
W. H. Boardman, Cleveland.
D. A. Dangler, Cleveland.
D. E. Dangler, Cleveland.
O. P. Moon, Lorain, Ohio.
E. C. Baxter, Mansfield, Ohio.
A. E. Ambs, St. Louis.

The main office of the company will be located at St. Louis, but offices will also be maintained at Chicago and Cleveland. All plants of the constituent companies will continue to be managed as heretofore by their own officers, and the stove trade will, therefore, practically observe no change in their relations with the establishments by whom they have heretofore been supplied. All contracts taken before the consummation of the consolidation will be filled strictly according to the terms of such contracts.

The American Stove Company will start out with a bonded indebtedness of $750,000, the bonds being in denominations of $1000, bearing 5 per cent. interest, and with a working capital of upward of $1,200,000. The bond issue is based on a deed of trust, covering the properties of the constituent companies, taken by the Equitable Trust Company of Chicago, the bonds being made payable at the Lincoln Trust Company, St. Louis. These bonds are redeemable in blocks of 50, beginning July 1, 1903, and in the same month every year up to 1917. All the stock of the company and the entire issue of bonds are held by persons interested in the new company, and it is stated that none of the stock or bonds will be placed on the market. It is further stated that the earnings for 1901 of the plants acquired were sufficient to meet all fixed charges, pay a 6 per cent. dividend upon the capital stock of the new company and leave a surplus of $50,000 for the retirement of bonds.

The William B. Pollock Company.—The large new plant of the William B. Pollock Company, at Youngstown, Ohio, which has been under erection for some months, has been finished and was put in operation last week. The new works are located on the old Himrod Furnace property, one of the best manufacturing sites in the Mahoning Valley. The works have direct connection with the Pittsburgh and Lake Erie, Lake Shore, Pennsylvania and the Baltimore & Ohio railroads. The new site was bought about a year ago by the William B. Pollock Company, and plans were drawn for the erection of one of the most complete boiler and structural iron work plants in the country. Early in July, or shortly after work was started on the new plant, the old works of the firm were destroyed by fire and at once renewed energies were concentrated in order to get the new plant finished as soon as possible. The plant is equipped with the most modern foundry and boiler shop appliances, and a great many large and modern iron working tools have been installed. The firm are manufacturers of steel and iron plate construction for blast furnaces, steel works, &c. Porter Pollock is general manager of the concern.

Improvements on the St. Paul Road.—Officials of the Chicago, Milwaukee & St. Paul Railroad Company announce that improvements planned for this year will cost over $5,000,000, and may run up to $8,000,000. The bridge work alone will involve the expenditure of $1,000,000. The largest undertaking in this direction will be a new bridge over the Mississippi at La Crosse, Wis., practically three bridges in one, with a total length of over 3000 feet. The Kansas City cut off is to have eight new bridges. The division from Milwaukee to La Crosse, 197 miles, is to be double tracked. In time the road will have a double track the entire distance between Chicago and St. Paul.

A Very Large Ferracute Stamping Press.

The Ferracute Machine Company of Bridgeton, N. J., recently built an unusually large press from designs by Oberlin Smith. It is of the double crank type and embodies several features which are unique in machines of this class. There is an improved construction for the prevention of upward deflection in the long shaft between its journal bearings in the main housings. This is accomplished by extending the pitman casting continuously from end to end, instead of by putting additional bearings in a trussed beam connecting the top of the columns, as is usual. This arrangement simplifies the design in some respects, as it is always desirable to connect the pitmen, and the same casting, by making it somewhat deeper and stronger, will give as good an effect as is attained by the other method.

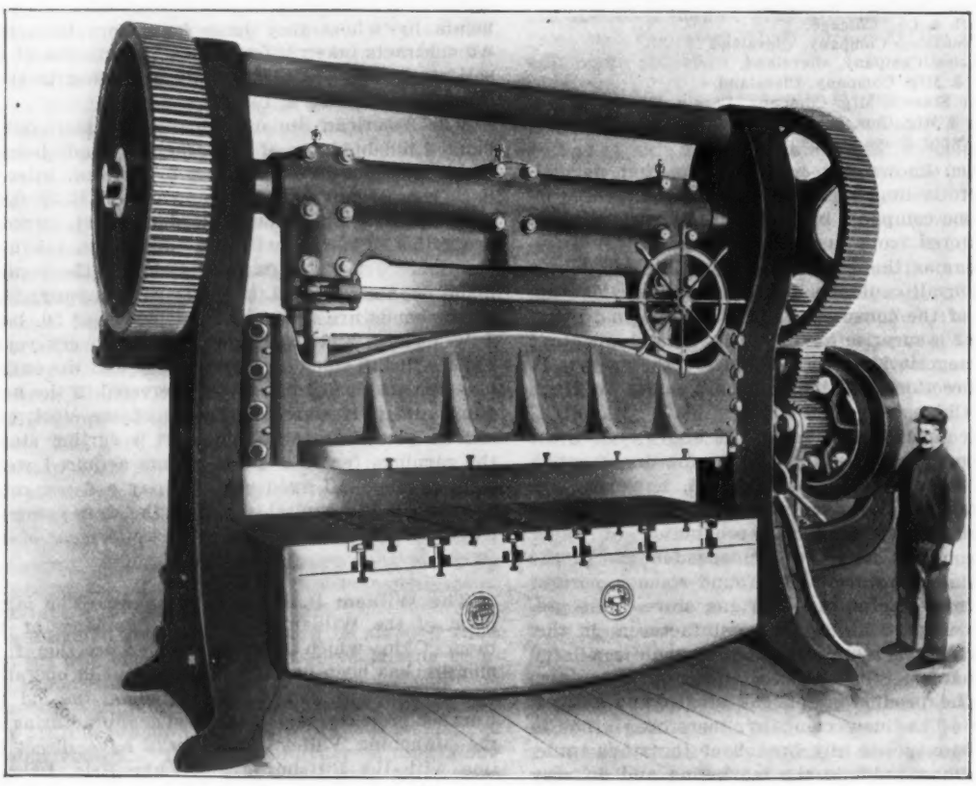
The machine is equipped with a new automatic friction clutch which, by a pressure on the treadle, causes it to make one stroke and stop with the ram up.

By a slight change of adjustment the machine may be worked by hand, the pressure of a single finger on the handle (shown at the right in front) sufficing to stop or start, and to bring the ram to any desired position. This can be done so delicately that the periphery of the main gears can be moved ⅛ inch at a time. A third condition of adjustment in the clutch allows for the continuous running of the ram. An adjustable brake is automatically thrown in when the driving friction is thrown out, and *vice versa*.

A feature, not common in presses of this kind, is the use of twin gears upon the main shaft, and twin pinions to drive them. This system is desirable for long shafts, where the hardest work may come near either end, as the torsional spring of the shaft is obviously much decreased. Moreover, each pinion, gear and main shaft journaled has only half as much work to do as is the case with the usual construction, with one large gear doing all the work from one end.

The gearing is all cut from the solid, the large gears upon the main shaft weighing over 1 ton each. The pinions are of steel. The adjustment of the ram, after slacking the pinch bolts upon the pitman stem screws, is performed by revolving the pilot wheel shown in front. A power attachment for this adjusting device can be provided, if desired.

The machine in question was especially intended for the embossing of steel doors, door frames, ceiling plates, wall plates and other ornamental architectural work. Its total weight is about 76,500 pounds, and it has been tested to over 400 tons ram pressure. The maximum working pressure, however, is assumed to be 300 tons, and it will take in a sheet of metal 10 x 4 feet, with allowance for clearance. Some of its various measurements are as follows: Hole through bed, 44 x 108 inches; distance in the clear between columns, 124 inches; hight from bed to ram, when up, 26 inches; standard stroke of ram, 4 inches; adjustment of ram downward, 10 inches; fly wheel, 40 x 7 inches, with a weight of 800 pounds, and a speed of 400 revolutions per minute; ratio of gearing, about 25, variable to 50, if desired; extreme hight from floor, 140 inches; extreme length from right to left, 208 inches; extreme depth front to back, 69 inches; bolster thickness, 6 inches.



A VERY LARGE FERRACUTE STAMPING PRESS.

During the year 1901 the Colorado Fuel & Iron Company have produced, December being estimated, 115,182 net tons of pig iron, 9462 tons of spiegeleisen, 154,546 net tons of steel rails, 104 tons of steel plates, 33,901 net tons of merchant iron, 12,448 tons of castings, 6850 tons of iron pipe and 10,716 net tons of spikes, bolts and nuts. The production of coal was 4,043,530 tons, of coke 554,544 tons and of iron ore 352,369 net tons. There was a heavy increase in nearly every branch over the preceding year.

It is stated on good authority that a company will be organized at Louisville, Ky., to be known as the Louisville Steel & Iron Company, with a capital of $500,000, half of which is to be used for the erection of a plant for the manufacture of steel billets, black and galvanized steel sheets and other steel products. It is understood that half of the amount necessary for the building of the plant has been subscribed. Davis, Kelly & Co. of that city are said to be interested.

The German Iron Industry in 1901.

In the history of the German iron industry the year 1901 will be recorded as one yielding very unsatisfactory results. Business started out poorly, grew worse and is in a doubly unsatisfactory condition, because no one can predict when the improvement hoped for will finally come. The unfortunate part of the crisis, which has now lasted for a year and a half, is that no one considers prices, that every seller aims to get ahead of the other, and by sacrifice sales contributes to spoiling the market and prevents a return of confidence on the part of consumers. If it were not for the fact that the iron industry of the United States is flourishing at the present time it would be out of the question for the German works to keep on producing at the rate at which they have been doing. Not only that American competition has been felt very little in the world's markets, but that the United States have also appeared as purchasers of iron. The reproach is made in regard to the heavy export movement that it reacts unfavorably from an economic point of view, because the export of German manufactures is rendered more difficult by the competition of foreign goods made of German raw material. This is not true in all branches. If tin plate is rolled from German sheet bars, which otherwise would not have been produced in Germany, no harm is done. Likewise it cannot be considered hurtful when German beams are put into buildings in England, German girder rails are laid down in the streets, or when English iron bars are crowded out in the home market by German steel bars. When, however, cheap drawn wire is put on the world's market by England made from German billets, sold at a loss, then the export has reached a dangerous position. The pig iron production of the German blast furnaces during the first 11 months of 1901 was 7,144,342 tons, as compared with 7,702,052 tons in the corresponding period of the preceding year. The output is distributed as follows, by districts:

	Tons.
Rhenish Provinces and Westphalia, without the Saar District and without Siegen	2,762,473
Siegen and Lahn districts, Hesse-Nassau	584,134
Silesia and Pomerania	699,039
Kingdom of Saxony	20,942
Hanover and Brunswick	314,797
Bavaria and Wurtemburg and Thuringia	103,372
Saar District, Loraine and Luxemburg	2,659,585
Total	7,144,342

While in the year 1900, particularly during the first half, the demand for pig iron constantly exceeded the supply, and at times there was a keen scarcity of pig iron, the very opposite conditions prevailed during last year. At first there was some hesitation about restricting the production of pig iron, because generally the decline was regarded as only a temporary check, no one believing in a prolonged period of lessened consumption. However, during the second quarter restrictions of production were begun quite generally, and on December 1 the German blast furnaces were 560,000 tons behind the production of the preceding year. The financial situation of the blast furnaces was relatively good, because while production and deliveries were checked the prices secured for the quantities delivered were remunerative, since they related chiefly to old contracts.

A serious condition of affairs confronted those puddle, steel and rolling mills which were forced to buy their own iron and had to take deliveries on old contracts. They met the sharp competition of the large works, which make iron from their own ores and their own fuel. The drop in prices for bars, sheets, bands and other not syndicated lines of goods was so sudden that these works could not even sell their product at the prices which they had to pay under contracts for their mill iron or their billets.

The iron foundries and machine shops suffered greatly under the conditions described though not to the extent of the puddle and rolling mills. The amount of orders on hand varied, and some of them were working for export to the extent of more than half their output.

Prices for iron and iron products have declined steadily during the year 1901. Such conditions accompany and follow every economic crisis. During the period under review the crisis has assumed an unusual character through the operations of the powerful syndicates. The intervention of these organizations has above all prevented the wild decline in all prices which followed a reaction in former periods. This did not occur this time, because some of the syndicates had long time deliveries at high prices, dating from the days of prosperity, and upon the execution of these they firmly insisted. This method on the other hand had the disadvantage that a part of the industrial branches working up such raw materials were placed in a very serious position. So far as the syndicates had no long time deliveries they were busy making price reductions during the past year. This course has proven that mutual price cutting in the home market is thus prevented, but that it has not in any way led to a development of the demand.

So far as statistics are available the sharp reduction in the consumption is due solely to the home market, while foreign markets, more particularly Great Britain, have drawn large quantities from Germany, and still continue to absorb them. Many works ship as much as 80 per cent. of their production of intermediate and final products, and although export is usually carried on at figures netting a loss on the business, it helped the works to work off the raw materials contracted for and thus led to bringing the situation back to a sounder basis. An important fact was it placed the works in the position of giving employment to their men.

So far as the situation among the syndicates is concerned the last year has led to few new creations. The syndicates of the sheet mills and of the cast iron pipe shops, which were nearly perfected, went to pieces in the last moment. The syndicate of the bar iron mills, on which work has been done for years, and whose business during the period under review has led to very heavy losses, has not yet been formed. On the other hand those syndicates which expired by limitation during the last year have nearly all been renewed, some of them in stronger shape. This is true of the beam syndicate, of the billet syndicate, the wire rod syndicate and the boiler tube and merchant pipe syndicate, which has just been established. The renewal of the plate and ship shapes syndicates, which soon expire, is confidently expected. During the last year the syndicate of the manufacturers of steel castings, which was always weak, went to pieces altogether. It could not continue to exist in view of the large number of outside works. However, the ruinous underbidding of the works in this branch has given fresh life to efforts to bring about a union of all the steel casting concerns, and negotiations are now pending looking to that end.

The Republic Iron & Steel Company.—Many rumors are in circulation relative to the removal of some of the plants of the Republic Iron & Steel Company to other locations, for the purpose of consolidating manufacturing operations. These rumors are largely based on fear or suspicion of residents of the localities which would be affected by the removal of the industries. It is, for instance, reported that the Sylvan Steel Works, at Moline, Ill., are to be removed to Springfield, and to be used in enlarging the works at that place, and that the mill at Brazil, Ind., particularly the turnbuckle department, will be removed to Terre Haute and consolidated with one of the company's plants at that point. It is ascertained on inquiry that the company have not decided to make any of these changes. They are making active preparations to get the Springfield plant in condition to resume work, but this does not involve the dismantling of works at any other place. The company have a great deal of business booked, and it is probable that some of the works which it is feared by local interests are about to be removed to other points may soon be found very actively employed in getting out orders. It seems quite unlikely that during such a period as the present, when the demand for iron and steel is so heavy, valuable time would be wasted in dismantling profitable plants and removing them to other locations.

Notes from Great Britain.

Colonel Millard Hunsiker as Chairman.

Colonel Millard Hunsiker, the popular chairman of the London Board of the United States Steel Corporation, has had an experience of chairing an annual meeting which he is not likely soon to forget. The company in question are the Nickel Corporation. Colonel Hunsiker has been the chairman for about three weeks, a new chairman and a new board having become necessary for the usual reason, that the affairs of the company were desperate. Some friends of the colonel, having acquired large blocks of shares in the company, have asked him to become chairman and to represent their interests, and accordingly last Thursday he took the chair, about 150 shareholders being present. Now the usual procedure is for the chairman to assure his shareholders that everything is for the best in this best of all possible worlds, smile serenely at everybody, get the report passed, and go home to dinner. The colonel had other ideas. He told his shareholders point blank that they were in a very bad way, that it would require all their business acumen to pull them through, that these were the facts, take them or leave them. The report of the directors was also drafted by the colonel in a similar strain. The result was that an enterprising gentleman thought surely there must be something wrong, and promptly assumed that for some insidious reason or another the colonel was purposely depreciating the property. Colonel Hunsiker did not beat about the bush, merely remarking that he would be sorry for any gentleman who made that remark to his face outside the room. This brought the house down, with the result that the directors got an enthusiastic vote of confidence, while the dissentients went home disgruntled. In conversation with Colonel Hunsiker to-day, he tells me that he and his colleagues are doing all they can to put the Nickel Corporation on a sound foundation, and he is not without hope that success will crown his efforts. In his address to the shareholders he remarked that neither the United States Steel Corporation nor any of their constituent parts were interested as shareholders. This morning comes a cable to the effect that the United States Steel Corporation have secured control of the Nickel Corporation of England. Colonel Hunsiker is thus placed in an invidious position. Whatever may be the truth of this rumor, he knows nothing of it himself personally, and was waiting for a reply to a cable when I saw him.

More Consolidation.

Although Arthur Keen, the chairman of the company, has not yet made any formal announcement, I believe it is practically certain that the Cyfarthfa Works, belonging to Crawshay Brothers in South Wales, have now been absorbed by Guest, Keen & Co. It is even said that the formal transfer has been signed. A further report is to the effect that William Evans, for many years manager of the Cyfarthfa Works, will be general manager of the combined undertaking. Meantime the changes in these works, which I forecasted a few weeks ago, are taking place. In conversation with an official of Guest, Keen & Co., I was informed that no information was available as yet as to the modernization of the plants operated by Guest, Keen & Co., Bolckow, Vaughan & Co. and the Consett Iron Company. It is stated that Frank C. Roberts, civil engineer of Philadelphia, is to be intrusted with the superintendence of the proposed new plants, which are to be of similar character to those in use in the United States, three years being the period contemplated. While the gentleman whom I interviewed on the question was rightly reticent, he admitted that there might be some truth in the rumor.

The Failure of Metal Brokers.

In my last week's letter I referred to the failure of William Sargant & Co., whose fall was directly brought about by the slump in copper. The liabilities are estimated at about $360,000, while the assets are about $60,000, thus leaving a deficit of $300,000. The loss incurred in copper contracts amounts to $120,000, in tin to $140,000 and in iron to $40,000. The case indicates vividly how the slump in copper and tin is affecting jobbers and brokers.

The Times and the Steel Trust.

There is a long and interesting article in the *Times* of last Wednesday upon the United States Steel Corporation. It is full of valuable thought, and is well worth the consideration of those interested in American steel. One paragraph reads as follows:

"Perhaps the most serious criticism of the scheme has been the almost absolute secrecy which has surrounded it from its very inception until the present. To an English investing public, accustomed, under the various companies acts, to have the most elaborate figures setting forth the values of the separate properties involved—certificates of the profits over a term of three or five years, an enumeration of the contracts entered into and those completed, and estimates—alas! often misleading—of savings and future profits, the announcement from time to time of the amounts subscribed or allotted, and the resulting statutory meeting, the reticence of the promoters of the steel trust must have seemed at least curious. This would, however, disappear if the American system of syndicates, and private subscriptions and underwriting, was fully understood, and if, further, there was added a knowledge of the co-operation in the various industries in carrying through such combinations. Under these combinations comparatively only the smallest amount of ready money is required in order to make the largest business, if thereby a fair assurance is given that the cost of production will be reduced and the enormous home market—already assured by legislation—is maintained free from ruinous domestic competition." An interesting forecast of the writer may also with advantage be placed on record:

"If my own opinion were asked, I should say that serious competition from American manufacturers of iron and steel in foreign countries is five years further away than it was last January, when the United States Steel Corporation, with their $1,400,000,000 of capital and securities, were organized. This does not, of course, mean that America will not, hereafter as heretofore, send abroad immense quantities of iron and steel; but it will be mainly in the form of raw materials upon which the finishing touch that gives both profit and value will be put in the country of destination and use."

The Engineers' Agreement.

I recently referred to the conference between the engineering employers and employees, at which some rearrangements in the working agreement were provisionally arrived at. The piece work clauses in the new agreement are as follows:

"The prices to be paid for piece work shall be fixed by mutual arrangement between the employer and the workman or workmen who perform the work, and the employers guarantee that they shall be such as will allow a workman of average efficiency to earn at least his time rate of wages, with increased earnings for increased production due to additional exertion on his part.

"The federation will discountenance any arrangement or rearrangement of prices which will not allow a workman to obtain increased earnings in respect of increased production due to such additional exertion, and the trade unions will discountenance any restriction of output.

"The federation agree to recommend that all wages and balances should be paid through the office.

"A mutual arrangement as to piece work rates between employer and workmen in no way interferes with the trade unions arranging with their own members the rates and conditions under which they shall work."

Subject to the continuance of a fair amount of trade, these clauses should mean increased wages, but the employers withstood all pressure and declined to guarantee a standard wage, so that in case trade should decline, as personally I fear it will, this will work out badly for the men. The federation referred to is, of course, the Employers' Federation. It is interesting also to note that the federation recommend their members that when they are carrying out changes in their workshops, which will result in displacement of labor, consideration should be given to the case of the workmen

who may be displaced, with a view, if possible, of retaining their services on the work affected, or finding other employment for them.

News As It is Writ.

The omnipresent *Times* correspondent cables from Wellington, New Zealand, as follows: "The Manawatu Railway Company recently invited tenders for a steel viaduct. The price quoted by American builders was one-fourth of that demanded by British firms, and in consequence of this the New Zealand Government has decided to send to America all future orders for steel bridges." American bridge builders can devoutly hope that this reporter's assurances as to the future policy of the New Zealanders is true! It would be so simple if only Americans need apply for bridge work in New Zealand. Speaking of bridges reminds me that the scheme for the construction of a bridge to span the great estuary at Sydney, New South Wales, is again being brought forward, and the Department of Public Works of the New South Wales Government are said to be on the point of inviting designs and tenders. The bridge will, in some respects, be as great a feat in engineering as the Queensferry bridge across the Firth of Forth. It will have a total length of 3000 feet, which is equal to about two of the spans of the Forth Bridge, while the clear headway will be 170 feet compared with 150 feet of the Forth. This maximum hight above high water level is to extend for a distance of 600 feet, which again will exceed the distance of maximum hight in each span in the Queensferry Bridge. The width of the bridge will be much greater, for in addition to a double line of rails of standard gauge, there will be two roadways 30 feet wide, with two footways 12 feet wide, and on the roadways electric tramways will be accommodated. The firm fortunate enough to secure this contract ought not only to make money, but also gain *kudos*.

Iron Mines in the Urals.

From an official report just issued it seems evident that the industrial development of Siberia will not want for either coal or iron. I extract the following particulars given by an Odessa correspondent to one of the most reliable of our London journals:

"Of the numerous iron ore mines in the Urals the richest are: 1, The Komaroff mine, containing 1,600,000,000 tons of 50 per cent. brown hematite; 2, the Magnitnaya Gore mine, which has not yet been fully explored, but is universally acknowledged to be the largest mass of magnetite ever seen. The amount of ore it contains must be reckoned as, at least, several millions of tons; and, 3, not to mention other rich mines in the Southern Urals, there are the Bakali mines, which have been explored in the portions belonging to the Government, and shown to contain about 5,000,000 tons of ore, and in the lots belonging to the Simsky Works there are 16,000,000 tons; while in the Elnitchi mines, near Bakali, about 1,000,000 tons have been discovered; so that it may be freely taken that this group of mines lying to the south of the Tcheliabinsk-Ufa branch of the great Siberian Railway will yield about 2,400,000,000 tons of iron ore. To the north of the railway there are the Visokaya Gora, Mount Blagodat and Sinarsky mines. The first of these contains about 16,000,000 tons, the second showed 6,400,000 tons at the first exploration, and afterward 13,000,000 tons were discovered. Of the last mine nothing definite can be said, as it abounds in pockets which sometimes come to an abrupt termination. Limiting the purview, therefore, to 2,400,000,000 tons in round numbers, and dividing this output by 100 years, it will be seen that the Ural mines are capable of producing 24,000,000 tons of ore, or about 10,000,000 tons of pig iron, per annum for the next century; but as this amount of ore can scarcely be worked, even with the additional coal from the Ekibaz-Tuza and Sudjenka mines, it would be more correct to reckon the output at 5,000,000 tons a year, at which rate the ore will last 200 years."

S. G. H.

The Fargo Bridge & Iron Company will erect a bridge works at Fargo, N. D., and enter the field for bridge contracts in the Northwest. The capital stock is $50,000. The organizer of the company is the senior partner of the old firm of Dibley & Robinson. Associated with him are John D. Benton, R. H. Coshun, D. B. Holt and others.

Trade Publications.

Emery Wheels and Grinding Machinery.—A very comprehensive catalogue has been issued by the Norton Emery Wheel Company of Worcester, Mass. These wheels are made by what is known as the vitrified process, in which they are subjected to intense heat, so that it is possible to use only the purest and best of emery and corundum, since inferior materials will not withstand the high temperatures necessary. The bond by which the particles of the wheel are held together has abrasive properties, so that every particle of the wheel cuts. Particular attention is called to the company's elastic wheels, which have certain valuable qualities for special purposes. They are elastic to a high degree, which makes them valuable for operations requiring very thin wheels of large diameter. Their high factor of safety makes them very popular, especially for grinding operations. They furnish a large number of these wheels for saw gummers, grinding between the teeth of cast gears, sharpening molding cutters, &c. They are especially adapted for use in plain grinding machines on shafts and spindles of soft steel or steel of low carbon, also in roll grinding. They can be run in caustic soda. The Norton plain grinding machine will take heavy cuts from heavier work than has heretofore been possible and will do this rapidly and accurately. To obtain the best results a great variety of double work and wheel speeds are provided. The machine has entirely new features, among which may be mentioned the extra heavy swivel double or triangular section frame, a permanent water guard and a straight way front and back support for the head and foot stocks, one of these ways being at the base of the table to give stability. The table is very rigid along its upper edge and front way to give support to the steady rest when grinding heavy cuts from thick or heavy work. The center of gravity of the head and foot stocks is very low and they rest on a wood base. All changes of speed are conveniently effected at the machine, there being no overhead cones. This grinder swings 8 inches in diameter and will take in work 18 feet between the centers.

Chain Machinery.—A little more than a quarter of a century ago the Turner, Vaughn & Taylor Company of Cuyahoga Falls, Ohio, started the manufacture of chain machinery. Their first cold link winder was brought out in 1875, the improved winder in 1884, and the Lightning Winder in 1897. This last machine has a productive capacity of more than double that of the older form, and the mechanical features which make this possible are protected by patent. The first foot hammer for welding links was brought out in 1882 and was further improved by a construction which made a "gathering blow" possible, and with this advance well shaped links and solid wheels became possible. A few years later the company introduced the cup die, which took the place of the old die and avoided the trouble caused by scale in the female die. They now present the Edgecomb hammer, which was perfected and placed on the market in July, last year.

Brake Shoes.—The American Brake Shoe Company, 675 Old Colony Building, Chicago, have issued an interesting *brochure*, illustrating the types of shoes manufactured by the company's licensees, comprising the Sargent Company, Chicago; Ramapo Foundry Company, Mahwah, N. J.; Parker & Topping, St. Paul, Minn.; Ross Meehan Foundry Company, Chattanooga, Tenn.; Charles Herron, Eureka Foundry Company, Cincinnati, and American Steel Casting Company, Thurlow, Pa. The patents owned by the company cover designs, methods of manufacture and application of tire dressing, high friction, extra durable and extra strong brake shoes. Full descriptions are given of the various patterns of shoes which are illustrated in this publication. The

company are also distributing bronze medals recording the fact that they received the highest awards for brake shoes made under their patents in Chicago in 1884, Chicago in 1893 and Paris in 1900. These medals are beautifully finished and make very handsome souvenirs.

Chucks.—The last catalogue by the Hoggson & Pettis Mfg. Company of New Haven, Conn., describes the Sweetland chuck, made by them. Their combination chuck is a combination in the fullest sense of the word. It is universal, and from that to independent, one jaw, two jaws or all jaws, all being thrown out as desired. This design unites two chucks in one. In a recess underneath the rack are cam blocks beveled to correspond with the beveled recess in the rack. These blocks are held in place by convex spring washers, which allow them to be moved to or from the center without disturbing the nuts, the friction being sufficient to hold them in place. When moved to the outer portion of the rack they connect the gearing, making the chuck universal, and when moved inward they disconnect the gearing, thus making each screw independent. The advantage of making each screw independent without disconnecting the others in the gearing is a feature not combined in any other chuck.

Boilers.—During the past year the International Boiler Works Company of East Stroudsburg, Pa., greatly enlarged their shops and fitted them with the most improved machinery, including the best pneumatic tools, for the manufacture of their boilers and for doing tank work. They carry at all times a large number of vertical and full length tube boilers, from which orders can be filled without delay. They also have on hand material for any size horizontal boiler, either with or without a dome, from 20 to 150 horse-power.

Gas and Gasoline Engines.—The Brighton gas and gasoline engines, designed and built by the Pierce-Crouch Engine Company of New Brighton, Pa., are fully illustrated in a handsome catalogue just issued. This engine carries out the straight line principle of construction. The entire top portion of the bed plate or frame extending between the cylinder and the main bearings consists of two heavy bodies of metal, one on each side, which extend in straight lines between the cylinders and bearings. The straight line principle is also carried out in the crank and fly wheel construction as far as possible. In all explosive engines the pressure transmitted from the piston to the fly wheels is violent and sudden, and the more directly it can be transmitted and absorbed by them the less liability will there be to breakage and disarrangement of the engine parts. These machines are equipped either with the hit or miss or throttling governor. The engines are particularly noted for their economy and close regulation.

Wood Working Machinery.—A very large catalogue has been received from the J. A. Fay & Egan Company of Cincinnati, dealing with their extended line of wood working machinery. The facilities of this company are so great that they can make a specialty of a great many machines. For instance, one department makes flooring machines and planers, another all of the sandpapering or polishing machines, another all of the molders, &c. The company are able to furnish entire and complete an outfit of machines for almost any kind of a plant for working wood.

Pneumatic Tools.—The Standard Pneumatic Tool Company of Chicago describe their Little Giant pneumatic tools, consisting of drills, boring machines, hammers, flue cutting and rolling machines, riveters, stay bolt cutters, chain hoists, &c., in a catalogue recently published. A mere inspection of the engravings presented shows the wide application of these tools and how completely they have been introduced in many industries.

Steam Hoisting Engines.—A catalogue of the C. W. Hunt Company of West New Brighton, New York, describes the several types of hoisting engines built by them. Economy of steam and durability of service have been the governing factors in the design of these engines. Interchangeability of parts has been completely carried out in the construction. Special machinery, steam templets, jigs and the use of gauges have permitted the accomplishment of this desirable system. The cylinders are cast in one piece with the stuffing box and the cross head guides, all of which are bored to size by the same bar and at one setting of the casting, thus making a perfect alignment of all the surfaces. The valves are ordinary D valves and work on a circular seat instead of on a plane surface. The valve is balanced, the pressure on the back being relieved, while the area of the working surface is nearly double that usually given to this style of valve. They continue steam tight for years, and have a further advantage of lifting from their seats to relieve the back pressure in reversing at full speed, or should the boiler foam and water be carried over with the steam. The valve gear is remarkably simple. The reversing gear is of Hackworth pattern. It gives a slightly quicker opening and closing of the ports than the usual link motion, and has the further advantage of having a constant lead at all points of cut off. It is driven from the crank pin and every part is entirely outside in plain sight. It has but three moving parts. The piston has an unusually long bearing surface in the cylinder and is fitted with ring packing. After the piston rod has been fastened to the piston it is ground perfectly true and smooth on dead centers. The crank shaft is of unusually large diameter, in order to provide the necessary rigidity. The gears are of ample strength for the heaviest work, the teeth being involute in form, machine cut, and the smallest pinion has not less than 20 teeth. Many halftones show the application of these engines in hoisting work.

Boilers, Engines, Oil, Gas and Artesian Well Supplies.—A catalogue by Boyaird & Seyfang Mfg. Company, Bradford, Pa., considers their boilers, engines, drilling and fishing tools, iron tanks, refining equipments and oil and gas artesian well appliances. Their new electric drilling engine is built expressly for drilling oil, gas and artesian wells. These engines include all the essential points of a first-class engine and are superior for their strength, durability and economy of steam. The latest addition is their improved reversing lever. To this is attached a ⅝-inch pipe, which extends to within easy reach of the driller, thereby giving him instantaneous and direct control over the link valve.

A booklet by the American Valve Company of Coxsackie, N. Y., describes their high grade valves for water, steam, gas, ammonia, &c., and their improved fire hydrants. Their gate valves are so designed that the disks will seat perfectly, irrespective of expansion or contraction of the body when in service.

We have received a pamphlet of the Tread-Kill snaking grate made by M. H. Treadwell & Co., 95 Liberty street, New York. This grate is built for every size of furnace, and may be applied to every style of front. Every part of the grate is so designed as to prevent warping, and there is no part which under the severest conditions will break or burn. The shaking movement will break clinker and clean a fire instantly from front to rear where free burning coal is used.

The Best Mfg. Company of Pittsburgh have issued a series of tables in convenient form covering cast iron flanges, cast iron and steel fittings, cast iron and steel reducing elbows, cast iron and steel T's, pipe bends, Climax angle, globe and check valves, pressure reducing valves, centrifugal separators, cast iron fittings and steel fittings and flanges.

A catalogue has been received from the Quincy Engine Works, Quincy, Ill., describing the Williams steam engines, condensing and non-condensing. Tables are presented showing the various sizes, speeds and powers of both their vertical and horizontal engines and giving the most suitable steam pressures for condensing and noncondensing service.

A catalogue in French, dealing with the Little Giant pneumatic tools built by the Standard Pneumatic Tool Company, has been issued from their Paris office, 18 Rue Reaumur, Paris.

A New Friction Clutch.

A new form of friction clutch has just been designed and patented by Slotkin & Praglin of 145-147 Mulberry street, New York. The clutch is being applied to light machine tools and special machinery operated by foot power. It is fastened to the driving shaft of the machine. As will be seen in Fig. 1, a small spur pinion is attached to the outer surface of the clutch on one side. When applied to a machine an internal gear segment is brought in contact with this pinion. Attached to the

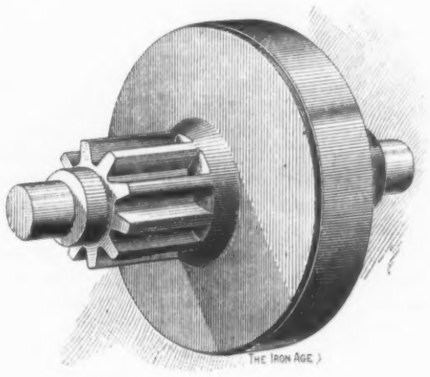


Fig. 1.—The Clutch Inclosed.

segment is a swinging foot lever. The machine is operated with a kick motion, and as the foot is thrust forward the clutch is brought into play and the shaft is propelled with considerable momentum. The operator can then allow the foot lever to rest, suspended motionless, while the machine is in motion until more power is required and then repeat the operation.

From Fig. 2 it will be observed that the cover has a small pin cast on its inner surface. When the clutch is properly closed this pin fits into the slot in the lever B, which has a projecting pin on its lower surface, as indicated at D. The latter pin comes in contact with the inclined end of the upper half of the disk designated 1, and which is riveted, H, to the lower half, 2. On each half of this disk there is a raised point, F and G, which comes in contact with the inner surface of the casing of the clutch. The lever B, it will be seen, is held to the lower half of the disk 2 by means of a small wire spring, E.

In operation, the forward movement of the pinion raises the lever as far as the stop C, thus drawing the two disks together by means of the pin D, sliding across the inclined surface. When the movement is reversed the disk is expanded, and the two contact points F and G grip the casing of the clutch, causing it to rotate. The outside casing is fastened to the shaft at J by means of a set screw.

The clutch is very powerful, and operates with scarcely any lost motion.

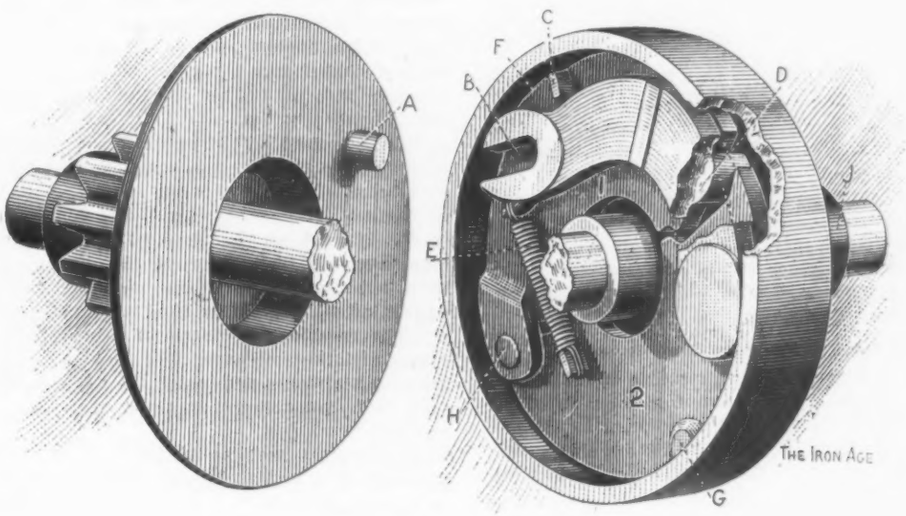


Fig. 2.—Showing the Working Parts.

A NEW FRICTION CLUTCH.

A Brass Band for Picketing.

The devices and stratagems employed by striking union men to harass and annoy nonunion men and the employers of them are ingenious to say the least. If the time assiduity was devoted to discovering a common ground of interest for both parties there would be no disagreements, but there seems to be no effort toward conciliatory measures, aggressive ones being more in favor. In England a certain factory employed nonunion men, the unionists having left the works upon a frivolous pretext. This last was the division of the working hours. From time immemorial it has been the custom there to go to work at 6 o'clock and stop for breakfast at 8 o'clock, but the proprietors of the works under strike adopted our system of starting at 7 o'clock and stopping only for dinner; this plan had been in force for four years and no objection had been made by either side to it. One day, however, the local branch of the union sent its delegate to the works and informed the proprietors that they "were not going to have" that system of working in force hereafter, and demanded a return to the old one.

Very naturally the owners objected to the arbitrary edict and discharged the edicters, thereupon they picketed the works and began their usual tactics. Resort being had to the courts by the employers, they obtained an injunction against the picketing business, but this, being stopped in one form, broke out in another, for the unionists hired a brass band to parade the streets directly in front of the factory and caused immense crowds to gather, under cover of which they prevented all persons from applying for work. The courts decided that the brass band business must cease and determine immediately, being merely an evasion, and the strikers are now trying to conjure up some other method of preventing their fellows from earning a living.

The Chateaugay Ore & Iron Company propose to expend $90,000 in modernizing their furnace and equipping it for the production of pig iron, to build 40 additional charcoal kilns at a cost of $40,000, to test thoroughly a new and promising iron mine owned by the

company, and to expend $94,000 on repairing and improving the railroad. The gross earnings of the company have been as follows: Separated ore, $42,642; forge iron, $19,584; pulp wood, $54,275; rents, $2171; stores, $26,564; farms, $910; railroad, $29,610; total, $175,754. The supply of pulp wood, it is stated, will last but a few years more at the present rate of consumption, and the forge iron is not likely to continue to yield income, as the former purchasers have discovered a substitute.

Philadelphia Foundrymen's Association.

The one hundred and fifteenth regular meeting of the Philadelphia Foundrymen's Association was held at the Manufacturers' Club, Philadelphia, Pa., Wednesday evening, January 8, having been postponed from the 1st inst., owing to that day being a holiday. Thomas I. Rankin, the president, occupied the chair, and called the meeting to order at the usual hour. Among those present may be mentioned the following:

Thos. I. Rankin, Abram Cox Stove Company, Philadelphia.
F. A. Riehle, Riehle Bros. Testing Machine Company, Philadelphia.
Antonio C. Pessano, Geo. V. Cresson Company, Philadelphia.
P. D. Wanner, Reading Foundry Company, Reading, Pa.
Thos. Hobson, *The Iron Age*, Philadelphia.
H. O. Evans, Thos. Devlin & Co., Philadelphia.
H. H. Shoemaker, Bridgeton Iron Company, Bridgeton, N. J.
A. L. Belfield, H. Belfield & Co., Philadelphia.
Geo. W. Moore, Camden Foundry Company, Camden, N. J.
W. H. Potter, E. C. Stearns & Co., Syracuse, N. Y.
Frank Etting, E. J. Etting, Philadelphia.
John Fleming, S. J. Creswell Iron Works, Philadelphia.
A. G. Warren, J. W. Paxson Company, Philadelphia.
E. E. Brown, E. E. Brown & Co., Philadelphia.
W. J. Faux, Philadelphia.
Thos. Devlin, Thos. Devlin & Co., Philadelphia.
Thos. B. Harkins, T. B. Harkins Foundry Company, Bristol, Pa.
E. J. Decker, Paul S. Reeves & Son, Philadelphia.
A. A. Miller, *The Iron Age*, Philadelphia.
Geo. C. Davis, chemist, Philadelphia.
H. C. Snyder, Thomas, Roberts, Stevenson Company, Philadelphia.
Jas. S. Stirling, Harlan & Hollingsworth Company, Wilmington, Del.
Wm. Hanson, Penna. Iron Works, Philadelphia.
Chas. Links, Thos. Devlin & Co., Philadelphia.
Howard Evans, J. W. Paxson Company, Philadelphia.
I. Decatur Smith, Philadelphia.

The minutes of the previous meeting were dispensed with in the usual manner. The question of incorporation of the association was discussed and referred to the Executive Committee with power of final action. No other business of moment was transacted.

Antonio C. Pessano addressed the meeting on the subject of the National Foundrymen's Association's recent meeting in New York City, full details of which were published in previous issues of *The Iron Age*.

W. M. Potter of E. C. Stearns & Co., Syracuse, N. Y., presented and read a paper on

The Stearns Molding Machine.

Among the many mechanical arts that of molding in the sand is one of the last to succumb to the uses of machinery. Steadily has machinery aided man in the production of the manifold wares demanded by civilization. Steadily has the prejudice of the worker given way until now, I think, among the last to acknowledge and recommend the use of machinery is President Fox of the Molders' Union, who says that he indorses the use of molding machines and advises molders to learn to use them.

The molding machine which I have here, which I wish to demonstrate to you and to which I invite your inspection and attention, is of the class termed by some "squeezers," for the reason that it does nothing but press the sand and takes the place of the hand rammer. Other types of molding machines have their place and usages, such as the stripper plate type and others where the pattern is drawn by mechanical means. These machines, however, are mainly adapted to the production of pieces that are alike on both sides of the pattern—that is, the cope and the nowel are alike—but they are not well adapted to the various usages where snap flask or bench work is done in general foundry practice.

In order to put in use the Stearns molding machine nothing different in the way of flasks, patterns or follow boards is required; the only change necessary being that the bottom boards should be made a loose fit, say, ¼ inch in length and in width smaller than the inside of the flask. I wish to say here that this machine is only intended for the use of manufacturers producing work in snap flasks on the bench, and it will not help a jobbing foundry where only a few castings at a time are made.

For the economical production of snap flask work the molding machine is indispensable to the modern foundry, and it has been the aim in the design of this machine to reduce the number of parts to the minimum, and also to so increase the leverage that the least exertion possible is required to operate it, so that a molder can produce a larger amount of work in a given time with less fatigue. Aside from the question of the reduction in the cost of molding the most noticeable feature in the use of the molding machine is the uniformity it produces in the castings. In the case of many castings that are made in our foundry, such as lawn mower wheels, where the wheels have an internal gear, the molding machine added materially to the uniformity of this work, and in other instances where small pieces of hardware are required to assemble without machine work the molding machine has produced a uniformity in the work that was not even appreciated by ourselves.

I have here a casting of a card hinge pattern that we make in large quantities. I have taken this just as it left the sand, and before it enters the tumbling mills, in order to show you an illustration of what I refer to. This card of patterns is 8 x 20 inches. A molder operates 100 molds per day, and is paid at the rate of 2 cents per mold for all good castings that pass inspection and assemble properly. Most of this small hardware work is made not by molders, but by either apprentices or young men who have not worked long at the business. We believe it is a conservative estimate to say that from 25 to 33 1-3 per cent. more work can be accomplished with the use of machines than without them. Of course, this is for such pieces as the machines are adapted to. In this connection we wish to say that there are many pieces that are made on the bench for which we would not recommend a machine, as they can be done better by hand. This machine is so designed that the platen when thrown back forms a regular bench that a molder can work on by hand and not use the machine portion of the ramming mechanism.

The increased output naturally decreases the cost of manufacture, making the machine pay for itself in a short time. In addition to the saving effected in the cost of castings, it is easier for the molder to produce his work. If paid by the piece he will earn considerably more per day than he would in putting up his molds with rammers, so that the manufacturer can, if he wishes, afford to divide part of the saving with the molder. The molding machine is of benefit both to the employer and the employee. The molder is as anxious to increase his wages and lessen his labor as the manufacturer is to get a larger quantity with more uniformity and at a lower cost.

The Stearns molding machine is so simple in construction that no complicated instructions are required to learn to operate it, even by those not familiar with molding machines. This advantage will be readily understood by all foundrymen. In our own foundry we have had instances of men who had never seen the inside of a foundry commence work on a Stearns molding machine, and in three weeks put up 150 molds per day of an average class of work in a flask of ordinary size.

I also have here brass patterns from the master patterns, so smooth that little or no work has been required in making the card of patterns. Formerly it cost from $30 to $50 to make a card of fine brass patterns such as these hinges. These are now by careful molding made smooth enough to require but little work in making the patterns. Any one producing a large quantity of pattern work can make great savings in this direction. I should be glad to give anybody information on this subject that feels interested in it. You may appreciate how little there is done on patterns when I show you these. When

they break off from the gate, as we all know they do constantly where patterns are in frequent or continuous use, we simply mold these over and solder on new pieces rather than take the trouble to let in sheet metal gates.

In order to fully illustrate the foregoing paper Mr. Potter had on exhibition one of the molding machines in the practical operation of making molds; various castings were also exhibited to show the class of work capable of being made on the machine. In the course of the discussion which followed the paper Mr. Potter said that the basis of price per mold as stated in his paper, 2 cents each, was probably a cheaper rate than would have to be paid in this neighborhood, but they had no difficulty in getting the work done at those figures in their own foundry.

The meeting then, on motion, adjourned. The usual luncheon was served after the meeting, Thomas I. Rankin, acting as toastmaster, called on E. E. Brown, F. Etting, W. M. Potter, P. D. Wanner and others, each of whom responded with a few remarks in an entertaining manner, after which the social session came to a close.

Notes from Mexico.

The Outlook for 1902.

DURANGO, January 7, 1902.—The new year dawns upon Mexico with every promise of continued prosperity. Peace and contentment rule in the land. Industrial and commercial activity are everywhere evident. Prospective projects for internal improvement in the way of railroad construction, plans for the establishment of new manufacturing plants and the enlargement of existing ones, foreshadow the continuance throughout the year of the especially favorable conditions which have existed in the business world here during the past 12 months.

Railway Betterments and Extensions.

One important piece of work which will be commenced at once is that of changing the Mexican National Railway from a narrow to a broad gauge road. A large amount of money will be expended in this enterprise. Other railway projects of more or less importance which have been "in the air" for some time past will no doubt pass from the realm of conjecture to that of actuality during the current year. The pressure upon the capacity of the rail mills of the United States is likely to cause the placement of orders for railroad material in other countries. Shipments of steel rails for Mr. Stilwell's Orient (Kansas City and Topolobampo) Railway have been made from Belgium. This, it is believed, however, has been in accordance with the conditions under which funds have been raised abroad for the construction of the road rather than because of an excess of orders for rails in the mills of the United States.

The Mexican International Railway, which is now controlled by the same people who own the National, will soon have its Santiago Papasquiaro extension in operation to the town of Santa Catarina, 55 km. from the place first named, its temporary terminus. The objective point of this branch from Durango is the busy mining camp of Guanacevi, an almost inaccessible point in the mountains in the northwestern part of the State, to reach which will entail very heavy railroad construction work. The company will do their own track laying upon the road soon to be opened up from Santiago Papasquiaro to Santa Catarina. The grading is about finished.

Mexico and Iron and Steel Manufacture.

With the completion of the large steel plant now building in Monterey, which was recently described in *The Iron Age*, Mexico will be in a position to supply a large part of, if not the entire, domestic demand for certain classes of iron and steel products. It is questionable, indeed, whether at the present stage of the country's development the local demand for steel rails, merchant iron, castings, &c., will be of sufficient magnitude to keep the works in operation to their full capacity. The consumptive capacity of the country is continually expanding, however, and as the Monterey works are modern in every way, and their facilities for obtaining raw materials for iron and steel manufacture excellent, the company will doubtless soon be able to greatly reduce the volume of the imports in these lines, if they do not entirely shut them off. The situation, at least in Nuevo Leon and adjoining States, will probably soon resemble that which now exists in the State of Jalisco as a consequence of the expansion of the iron manufacturing industry there. This situation is reflected by the Guadalajara *News*, which in a recent number says: "There is considerable activity in the manufacture of Jalisco iron. The works at Providencia have been lately extended. The works at Tula, in the State of Jalisco, are being renovated and improved, and within a few weeks will be again in active production on a much larger scale than ever. It is well known that Jalisco iron is of very superior quality, competing successfully with Swedish iron in malleability and flexibility. At the present moment the anomaly exists that home made iron is dearer than the imported article, but the increasing facilities of production and transportation will naturally alter these conditions, and the time is approaching when imports of iron and articles made of iron will become very limited in Guadalajara."

Exchange on New York.

Exchange has dropped to 118, a fluctuation of some 15 points within two or three weeks. One can never tell the exact status of one's bank account in Mexico. The excitement which attends these ups and downs of the money market is perhaps one of the conditions which attract outsiders to take a hand in the game of trade here.

The Pan-American Conference.

The Pan-American Congress is drawing to a close. A few newspapers in New York and Chicago have lately joined the ranks of the clerical element, if one may judge by recent captions of their articles, in which the Pan-American Congress is referred to as being a "failure," and the inaccurate statement made that "many of the delegates have gone home" in disgust. Two members only have left. The principal delegate from Brazil was called away by death; one of the members of the United States delegation returned home, it is said, for private and political reasons.

The congress has done good work. Important matters have been fairly and fully discussed in the most fraternal spirit. Some of the reports relating to international trade topics—such as patents and trade-marks, weights and measures, &c.—may be printed at a later date in *The Iron Age*.

There has been some little friction over the arbitration question. The proposal of the Mexican delegates, spoken of in these notes as being "harmless and unsatisfying," was abandoned. At present there is a feeling that most of the nations taking part in the congress will become parties to the scheme of arbitration as embodied in the Hague convention. J. J. D.

The Carnegie Steel Company last week placed on the market all of their real estate holdings in Munhull Borough, where the Homestead steel works are located. The strip included 20 acres of land around the Homestead Carnegie Library. Some time ago it was all hills and hollows, but the company leveled and terraced it and laid it out in lots. The rush for lots in this resident section was unprecedented, over $300,000 worth having been sold. In the deeds the company provide that no liquor shall be sold on the properties, and that buildings of a certain class shall be erected at prescribed distances back from the street.

The *Engineering and Mining Journal* and *Mining and Metallurgy*, the latter a semimonthly publication, have been consolidated. W. J. Johnston is president, F. J. Pratt, treasurer, and Lucius S. Bigelow is superintendent and general manager. Dr. David T. Day is editor-in-chief, Edward W. Parker is managing editor and Frederick Hobart associate editor.

The Collapse in Scotch Iron Warrants.

GLASGOW, December 27, 1901.—The Glasgow iron ring was considerably disturbed out of the even tenor of its (modern) way on the eve of Christmas by a collapse in the London metal market. A firm of London brokers, who were heavily caught by the fall in copper and tin, were unable to meet their engagements on settling day. When the announcement of this failure reached Glasgow there was an instant drop in Scotch iron warrants. The reason for this was that the London firm had been for some time past practically holding the whole of the Scotch warrants, either for themselves or on account of clients. They have had the market covered for some months, and though the corner seemed a safe one with so small a stock as 58,000 tons in the warrant stores, it has been so light that the market has been suffering under severe congestion. With the failure of the London brokers the market here became frightened, and warrants dropped from about 55 to 48 shillings 9 pence, and then recovered to 49 shillings 6 pence, just before the market closed for the holidays. What will be the ultimate result of the clearing out of the corner it is yet too soon to offer an opinion, but the present price is moderate considering the smallness of the stock and the present cost of manufacturing. There are now 83 furnaces in blast in Scotland, as compared with 84 a year ago, and smelters are easily sending all their output into consumption. At least they have been doing so until now, but at the end of this week the iron and steel works will begin to close down for the New Year holidays (Christmas is not kept in Scotland by the working classes), and it is expected that a number of these works will not reopen before the end of January, so short of orders are they. This, of course, will materially reduce the consumption of pig iron during the next few weeks, and therefore some of the furnaces may be damped out for overhaul and repairs.

The Year 1901.

The year which is just closing has not been a brilliant one in the iron trade, and yet, on the whole, has not been so bad as it promised to be at one time. It opened with a gloomy outlook, with very high prices for raw material, and lowering of prices for finished products. Manufacturers were so short of orders that most of them prolonged the New Year holidays until the end of January, in the hope of bringing down both coal and pig iron by a suspension of consumption. In effect a reduction in material was produced, and pig iron, which was selling at 84 shillings in November, 1900, was down to 60 shillings before the end of January, 1901, while coal in the same period declined about 25 per cent. This put iron and steel manufacturers on a better footing, and between February and May they were able to get wages down 15 per cent., but still orders were scarce and prices for finished products declined even more quickly than costs. In the first half of the year the volume of work was not large, many works were closed altogether, and others had to shut down some departments. But about midsummer a revival began, and the trade became so active that the total output of the year will not be much if anything short of that of 1900. As to this, however, we must await the collection of statistics, which are not usually made up until after the holidays. But though the trade has been active it has not been cheerful. Prices have been kept down by the pressure of German and Belgian iron and steel rushed not so much into Scotland (though we have had some share of it) as into the markets of England and into markets abroad usually supplied from England and Scotland. The year 1901 has not been affected like 1900 by a large inflow of American iron and steel, but it has witnessed the appearance in considerable quantities of Canadian pig iron.

Shipbuilding.

Reserving for another occasion an examination of the pig iron situation, I propose now to set forth the position in our leading industry—that of shipbuilding. It was the decline in the flow of orders in the early part of the year for new ships that caused the depression in the iron and steel industries, and the renewed flow in the summer months that revived these industries. The decline in the price of ship plates and other material no doubt stimulated the demand for new ships, but it is also to be remembered that for two years or so shipowners had been making money fast, both on trading and on the sale of old ships, and that some of them had made enormous profits out of the South African War charters. These realized profits sought investment and nothing better offered than shipping—indeed ship owners seldom find anything better than ships into which to put their capital. Anyhow, during last summer they ordered freely—too freely, because the world's trade was shrinking, and more vessels were being freed from Government service in South Africa. The last half of 1901 has been marked by a heavy slump in freights—so heavy that it is now extremely difficult for a ship owner to obtain a charter that will do more than enable him to make both ends meet, while many, probably the majority of charters, are leaving a dead loss. Then the evident desire for new tonnage disappeared, contracting ceased, and at the end of the year Scotch shipbuilders find themselves with considerably less tonnage of orders on their books than at the end of 1900. Yet they have a good deal on hand, after just completing a record year.

Indeed, the year 1901 is a record one not in Scotland alone, but in the annals of the world's shipbuilding. It is rather difficult to form an absolutely accurate estimate because the various returns are made in different terms of measurement. But reducing all as near as one can to the common denominator of the Board of Trade rule, the world's output of new tonnage in 1901 may be taken as about 2,650,000 tons. Of that total upward of two-thirds has been constructed in the United Kingdom, and in the following proportions in relation to 1900:

British Output of New Ships.

	1901.		1900.	
	Number.	Tons.	Number.	Tons.
England	834	1,091,347	816	994,519
Scotland	376	554,406	406	534,759
Ireland	23	151,922	26	131,431
Totals	1,233	1,797,675	1,248	1,660,709

Thus Scotland produced nearly one-third of the British output and 20,000 tons more than in 1900. The increase would appear to be about double that by builders' measurements, but it is large enough on the Board of Trade tonnage scale. The distribution of the work in Scotland has been as under:

Scotch Output of New Ships.

	1901.		1900.	
District.	Number.	Tons.	Number.	Tons.
Clyde	297	511,990	318	486,337
Forth	32	15,523	33	18,402
Tay	16	20,458	14	21,639
Dee	31	6,435	41	8,381
Totals	376	554,406	406	534,759

For the first time the Clyde output has exceeded 500,000 tons. It is about 50 per cent. more than the entire output of the United States, and is equal to about 60 per cent. of all the world's output outside the United Kingdom. In 1880 the output was as low as 172,440 tons, just about a third of that of last year.

The Clyde output is also larger than that of any other single producing district. It compares in this country with the Tyne, 313,130 tons; the Wear, 270,550 tons; the Tees and Hartlepool, 312,970 tons; the Thames, 55,400 tons; the Mersey and Northwest Coast, 52,770 tons and the Royal Naval Dockyards (war ships only), 64,910. Further, the Clyde output includes every species of craft on the face of the waters. It would occupy too much space to go over the production of each yard, but your readers will be interested in seeing the records of some of our chief builders.

Output of Principal Clyde Shipbuilders.

	1901. Tons.	1900. Tons.
Russell & Co	58,387	54,415
John Brown & Co	49,800	26,250
C. Connell & Co	36,876	32,316
W. Denny & Bros	35,266	30,600
Fairfield Company	28,565	17,765
W. & W. Henderson & Co	24,563	29,040
A. Stephen & Son	21,906	34,555
A. Rodger & Co	19,974	19,615
Barclay, Curle & Co	19,072	17,660

W. Hamilton & Co.	18,270	23,480
London & Glasgow Company	17,550	4,700
W. Beardmore & Co.	17,390	6,250
Napier & Miller	17,057	21,518
R. Duncan & Co.	14,930	12,000
Scott & Co.	13,970	29,970
A. McMillan & Co.	13,738	15,010
Caird & Co.	13,387	22,714
A. & J. Inglis	12,204	7,430

The large output of Russell & Co. was almost entirely of the cargo tramp order, and was therefore inferior in quality and power to that of John Brown & Co., whose output was entirely war ships and first-class liners. Of sailing ships the output was 65, aggregating 19,312 tons. The tendency to increase in the size of vessels may be noted from the fact that the number of launches in Scotland in 1901 was 30 fewer than in 1900, yet the total tonnage was 20,000 tons larger. The average is, of course, reduced by the large number of small miscellaneous craft as well as ocean leviathans turned out of the Clyde shipyards.

Of marine engines the output of the United Kingdom in 1901 totals up to about 1,476,800 indicated horse-power. The Scotch proportion was 472,190 indicated horse-power, of which 440,125 indicated horse-power represents the work of Clyde engine shops. The largest output of engines here was that of John Brown & Co., with 61,000 indicated horse-power, and the next that of the Fairfield Shipbuilding & Engineering Company, with 57,000 indicated horse-power, but these figures have been topped by some English engineers who are not shipbuilders.

The Shipbuilding Outlook.

While the first year of the new century establishes a record in the matter of shipbuilding the second year begins with a considerable amount of doubt and gloom. Shipbuilders are tolerably well supplied with work in the mean time—Clyde firms having on hand contracts to the extent of 400,000 tons and the other districts in Scotland about 30,000 tons more. But this is considerably less than last year, and as contracting has ceased for the time being new orders are not coming in to replace those which are being finished off. At present the prospect is that in the course of six months or so bare yards will be the rule on the Clyde, but much may happen before then, and some of our shipbuilders take a sanguine view of the year upon which we are just entering.

B. T.

The Iron and Steel Makers of Belgium.

In response to a number of requests we have had prepared by our Belgian correspondent the following list of the iron and steel manufacturers of Belgium:

Blast Furnaces

Societe Anonyme John Cockerill, at Seraing. Foundry, forge, Bessemer and special pig iron.

Soc. An. d'Ougree et Marihaye, at Ougree. Bessemer, forge, foundry, Thomas and spiegeleisen.

Hauts Fourneaux et Mines d'Halanzy, at Halanzy. Bessemer, foundry, forge and Thomas pig.

Soc. d'Esperance Longdoz, at Liége. Bessemer, Thomas, foundry, forge and special pig and spiegeleisen.

Soc. An. des Hauts Fourneaux de Grivegnee, at Grivegnee. Foundry, mill and special iron.

Soc. An. des Hauts Fourneaux et Acieries d'Angleur, at Sclessin. Foundry, mill and Bessemer pig.

Soc. An. des Hauts Fourneaux d'Athus, at Athus. Thomas, foundry and mill iron.

Soc. An. des Hauts Fourneaux de Musson, at Musson (par Halanzy). Foundry and mill iron.

Soc. An. des Hauts Fourneaux et Usines de la Providence, at Marchiennes. Foundry and mill iron.

Soc. An. de Marcinelle et Couillet, at Couillet. Bessemer, Thomas, foundry and forge pig iron.

Soc. An. des Hauts Fourneaux et Usines de Monceau St. Fiacre, at Monceau sur Sambre. Foundry and forge pig iron.

Soc. An. des Hauts Fourneaux du Sud de Chatelineau, at Chatelineau. Thomas, hematite, foundry and forge pig iron.

Soc. An. des Usines de Moncheret, at Acoz. Foundry and mill iron.

Soc. An. des Usines de Bonehill, at Marchienne. Foundry and mill iron.

Soc. des Hauts Fourneaux et Fonderies de Thy le Chateau et Marcinelle, at Marcinelle. Bessemer, hematite, foundry, forge and special pig iron.

Soc. des Hauts Fourneaux de La Louviere, at La Louviere. Foundry and forge iron.

Rolling Mills.

Gustave Boel, at La Louviere. (Bessemer steel plant.) Iron and steel shapes, bars and angle bars.

Soc. des Acieries d'Angleur, at Tilleur. (Acid Bessemer, basic Bessemer and open hearth steel plant.) Blooms, billets, steel rails, ties, springs, tires, beams and shapes, iron and steel bars, spring steel, gun barrel steel. Roll iron and steel.

Soc. John Cockerill, at Seraing. (Acid and basic Bessemer steel plant.) Blooms and billets, rails and accessories, bars, beams and shapes, plates, springs, tires, bridges and structural work. Roll iron and steel.

Soc. des Forges, Acieries et Laminoirs de Thy le Chateau et Marcinelle, at Marcinelle. (Acid Bessemer steel plant.) Steel blooms and billets, rails and accessories, beams and shapes. Iron merchant bars and shapes.

Soc. d'Ougree et Marihaye, at Ougree. (Acid and basic Bessemer and open hearth steel plant.) Rails, beams, shapes and plates and iron merchant bars.

Soc. des Hauts Fourneaux et Usines de la Providence, at Marchiennes. Beams and shapes, riveted girders and steel rails.

Soc. An. de Marcinelle et Couillet, at Couillet. (Basic Bessemer and open hearth steel plant.) Steel blooms, billets, rails and accessories, beams and shapes. Iron common and special bars.

Soc. Metallurgique d'Esperance Longdoz, at Liége. Steel and iron rails, plates and merchant bars.

Soc. des Laminoirs de l'Ourthe, at Sanheid-lez-Chenee. Merchant steel bars and iron sheets.

Soc. Miniere et Metallurgique de Monceau St. Fiacre, at Monceau sur Sambre. Iron beams and shapes, iron bars and light iron rails.

Soc. des Laminoirs a Toles de la Regissa, at Huy. Iron sheets.

Soc. des Toleries Dufrenoy Delloye, at Huy. Iron sheets.

Soc. An. des Usines Bonehill, at Marchienne-au-Pont. Shapes.

Soc. An. des Laminoirs, Forges et Fonderies de Jemappes, V. Demerbe & Co. Specialty of high grade bars and shapes. Also mine and tramway rails.

Soc. An. des Forges de Clabecq, 30 Rue des Drapiers, Bruxelles. (Basic Bessemer and open hearth steel plant.) Roll iron angles, channels and tees, and special shapes for shipbuilding, iron and steel locomotive plates and large flats.

Soc. An. des Forges de Trazegnies, at Trazegnies. Iron beams and shapes, bars and plates.

Soc. des Forges et Laminoirs du Marais, at Montigny sur Sambre. Iron merchant bars and shapes and iron mine and tramway rails.

Soc. An. des Laminoirs de Chatelet, at Chatelet. Iron bars and flats, angles and tees.

Soc. An. des Forges et Laminoirs de l'Alliance, at Charleroi. Iron and bars and shapes, mine rails and bolt stock.

Soc. An. des Forges et Laminoirs de St. Victor, at Marchienne-au-Pont. Nail rods, rounds, squares and various iron shapes.

Soc. An. des Laminoirs du Ruau, at Monceau-sur-Sambre. Special and common merchant bars, angles, zees and iron rails.

Soc. An. des Usines de Moncheret, at Acoz. Iron shapes, bolt stock and light rails.

Soc. An. des Forges et Laminoirs de Baume et La Croyere Reunis, at La Croyere. Iron bars and bridge shapes, mine rails and special iron.

Soc. An. de la Fabrique de Fer de Charleroi, at Charleroi. Iron plates and sheets and large flats.

Soc. Metallurgique de Sambre et Moselle, at Montigny-sur-Sambre. Iron special and common bars, beams, shapes and bands.

Soc. An. des Usines du Phenix, at Chatelineau. Iron plates, sheets and large flats and corrugated sheets.

Fernand Thiebaut et Cie., at Marchiennes. Small iron bars.

Steel Works.

In the above list of rolling mills we have noted those which possess steel plants, these including Gustave Boel, Angleur Cockerill, Ougree et Marihaye, Thy-le-Chateau, Clabecq, Marcinelle et Couillet. Besides these there are the following:

Soc. des Acieries de Charleroi, at Charleroi. Acid Bessemer steel.

Soc. des Acieries et Fonderies d'Art, at Haine St. Pierre. Acid Bessemer steel.

Acieries Hollado-Belges de l'Escaut, 16 Rue du Roi, at Antwerp. Open hearth steel.

Soc. des Forges et Acieries de Bruges, at Bruges. Open hearth steel.

Soc des Chantiers Navals de Nicolaieff, at Bouffioulx. Open hearth steel.

Soc. des Hauts Fourneaux et Acieries d'Athus, at Athus. Basic Bessemer steel.

Soc. des Usines et Acieries Leonard Giot, at Marchienne-au-Pont. Soft steel.

Standardized Drillings.—The Standardizing Bureau of the American Foundrymen's Association announces that hereafter separate bottles of the standardized drillings, A, B, C and D, will be sold for $2 each. This is to accommodate those laboratories in which only one or two of the standards are needed. The standardized drillings are now in such demand that it has been found necessary to prepare a fresh stock of samples A and D, and these are now again ready for distribution.

The Iron Age

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DAVID WILLIAMS COMPANY, - - - - - - - PUBLISHERS.
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RICHARD R. WILLIAMS, - - - - - - - - HARDWARE EDITOR.
JOHN S. KING, - - - - - - - - - BUSINESS MANAGER.

An Interesting Judicial Opinion.

Probably the most remarkable judicial deliverance regarding consolidations has recently been made by Judge Tuley of Chicago, one of the leading judges of the State courts of Illinois. The judge in question is a conservative, whose training has been along the lines of State rights and of consistent antagonism to corporate growth. He is the nestor of the Chicago judiciary, and has been on the bench so many years that it would well be supposed that he is entirely free from the influence of new commercial and industrial developments, which might, under ordinary circumstances, have an important effect on the judgment of a young lawyer trained under modern business conditions. Judge Tuley's utterances are, therefore, deeply interesting to the commercial and industrial world. They are further more remarkable as coming from a State Judge in a State in which the courts have quite uniformly shown much hostility to consolidations of corporations. The case which brought out the opinion of the judge concerned the merger of the Pullman and the Wagner sleeping car companies. He refused to grant a Pullman stockholder a preliminary injunction restraining the consummation of the transaction two years since by which the Pullman Company absorbed their only competitor in the sleeping car business. The complainant was overruled in every contention, and the opinion was a sweeping victory for the Pullman Company.

The original bill alleged, among other things, that the proposed purchase was for the purpose of enabling the Pullman Company to control the sleeping and parlor car business throughout the United States, and that the transaction if consummated would create a trust and monopoly, thereby violating the laws and statutes of the State of Illinois.

While the judgment rendered was one which could hardly have been avoided in this particular instance, because it was held that the motive of the complainant was to force the Pullman Company to buy the shares standing in his name at an exorbitant price, yet in rendering the decision the judge went beyond the strict requirements of the case and proceeded to discuss the antitrust laws of Illinois, which had been evoked by the complainant's attorneys to support them in the suit. He stated that it is not every combination that is prohibited by the Illinois antitrust laws, or that is opposed to public policy. "It will be admitted," he said, "that one merchant may buy out the stock of another and unite it with his own, or the two may combine their stocks and form a copartnership, or may combine their stocks and one take only a percentage of the future profits agreed upon. This may and does lessen competition, and does not necessarily increase prices or prevent competition. What can be done by individuals, as such, may be done by copartnerships, by mercantile or incorporated associations or by companies. Not only may contracts of this nature be made, but covenants not to engage in business within a limited number of years or at the same place have uniformly been sustained by the courts as not being an unreasonable restraint of trade and held to be lawful." He asserted that all so-called antitrust laws must be read and construed in the light of the constitutional guarantees of the right to hold property and to contract with reference thereto.

He goes further, and states that in his opinion recent legislation would seem to indicate that the public policy of the State, of opposition to combinations and monopolies, has changed to a public policy favoring combinations and monopolies. He also says that the antitrust legislation of Illinois, since 1891, has been of such a character as to raise doubts as to what is now the law of the State upon the subject. Unless a court can see that some existing antitrust statute has been violated, any decision found upon the theory that the public policy of the State is that of opposition to trusts and combinations would reflect more the individual opinion of the judge than the public policy indicated by the legislation of the State since 1891.

While it is likely that the position taken by Judge Tuley will be disputed by other jurists in Illinois, who will contend that the State antitrust laws must be construed as in full force and effect until they have been specifically repealed, yet, coming from such an eminent expounder of State law, this opinion will have great weight in the decision of future questions affecting consolidations which may be brought before Illinois courts for adjudication. That State, particularly the city of Chicago, has lost considerable commercial prestige in late years by the removal into other States of the general offices of a number of large corporations because of the apparent hostility of the courts to consolidations. A number of decisions have been made which strongly indicated a feeling of this character on the part of the State judiciary. These decisions have been severely criticised by Chicago business interests as not in accordance with modern ideas and methods. The Pullman decision is, we believe, the first indication of a tendency by the Illinois courts to construe the State laws more liberally toward corporations.

The New British Coal Commission.

The people of Great Britain have a perpetual source of anxiety in the question of the probable duration of their coal supplies. This subject has been more or less formally investigated again and again, but it seems to present itself in varying aspects, and the hope that something will be discovered to warrant the prediction of an unrestricted output as long as the nation shall need it prompts those for whom the subject has especial interest to seek the poor comfort which may be found in Parliamentary blue books dealing with the imminent problem of what Professor Jevons fixed in economic literature as "the empty coal cellar." A new Parliamentary Commission has just been created with the following objects:

"To inquire into the extent and available resources of the coal fields of the United Kingdom; the rate of exhaustion which may be anticipated, having regard to possible economies in use by the substitution of other fuel, or the adoption of other kinds of power; the effect of our exports of coal on the home supply and the time for which that supply, especially of the more valuable kinds of coal, will probably be available to British consumers, including the Royal Navy, at a cost which would not be detrimental to the general welfare; the possibility of a reduction in that cost by cheaper transport or by the avoidance of unnecessary waste in working through the adoption of better methods and improved appliances or

through a change in the customary term and provisions of mineral leases; and whether the mining industry of this country under existing conditions is maintaining its competitive power with the coal fields of other countries."

The last Parliamentary inquiry comparable in scope and thoroughness to that devolving upon the new Commission was undertaken nearly 30 years ago. The sessions of the Commission lasted through five years, and its report was exhaustive; but the conviction obtains among those not directly connected with the coal interest that during the interval something has occurred to change the situation, and that a Commission now created, working in the fuller light of larger experience and more exact technical knowledge, can discover something which will serve to allay the popular apprehension and shift upon succeeding generations the responsibility of conserving the fuel supplies of the British islands—if, meanwhile, some substitute for coal is not discovered which will make it of minor importance as a factor in the equation of British industrial supremacy.

What the new Commission will find to report is still a matter of conjecture. Since the last Parliamentary inquiry was finished the coal fields then open have been worked actively, and in a more thorough manner. New pits have been sunk in some localities outside the presumed limits of the coal areas, and much knowledge has been gained by more thorough geological surveys, which have revised and corrected the results of earlier investigations. How far these new conclusions may be accepted will remain a matter of conjecture until theory is brought to the test of practice. In the British Isles the coal rarely outcrops; and what will be found at indeterminate depths in the undeveloped country between the superficial showings cannot be known until shafts are sunk and workings begun. Experience has established the fact that, in a great many instances, estimates of the value of one portion of a coal field based upon the results of development in another portion are often quite fallacious. Seams get thin and deteriorate, and hidden faults will sometimes throw the coal to depths at which its recovery costs more than it is worth. It is a safe generalization that the amount of coal available for recovery is always less than the estimate, and that at whatever figure a Parliamentary Commission may fix it, the amount which will reach the market will be cut down by one cause or another, and that no estimate can forecast the course of prices for an article of universal utility in failing supply.

The question of immediate interest to English consumers is not, How long will our available supply of coal last at our present rate of consumption? but, What will happen when, by reason of relatively dear fuel, the cost of manufacturing in England places British products out of competition with those of countries more favored in this respect? The pre-eminence of British manufacturing during her period of greatest development was due very largely to cheap and abundant coal. This was a great part of the national capital; if that is lost, the chances of successfully carrying on the business are by no means good. It would seem to be evident that the maintenance of the British coal export trade is as impossible as it is undesirable. In 1871 the Parliamentary Commission estimated the amount of coal in the ground at 146,454,000,000 tons, but this included seams down to 1 foot in thickness, which could only be worked remuneratively when prices were abnormally high or circumstances exceptionally favorable. In 1870 the consumption was 118,000,000 tons. During the 30 years ended with 1900 no less than 5,025,000,000 tons have been consumed or exported, which is assumed on good statistical authority to be not less than one-eighteenth of the total supply available at the beginning of that period. Should the same rate of increase be continued, as it undoubtedly will unless artificially restrained, the last available ton of coal would have been raised before the end of the present century.

England has no coal to export. No present gain to the pit owners will compensate the nation for the rapid process of depletion which the exportation of the fuel needed at home involves. Sir Michael Hicks-Beach's expedient of an export duty of a shilling a ton was no doubt indefensible, theoretically, on any other ground than that the nation needed money from every source from which it could be raised; but a prohibitory export duty of 10 or 15 shillings would be strictly logical from the economic viewpoint, though not at all so from the viewpoint of the revenue. Probably in no other way can Great Britain retain the advantage of cheap fuel. It is much better to let the countries now depending upon Great Britain for fuel shift for themselves, than to encourage them in dependence upon British coal until the British consumer must himself look to foreign sources for coal to keep his hearth warm and his industrial fires alight. When the apparently inevitable wastes of mining and transportation are considered, the conviction is irresistible that the most economical use of British coal is to convert it into electrical energy at the pit mouth, and distribute this wherever power and heat are needed. This is the conclusion to which those who study the subject intelligently are coming, and if the 58,000,000 tons exported in 1900, aside from that taken for the British navy and for vessels coaling in British ports, had been retained for home consumption, the coal problem would not be one of present anxiety to those who are studying the immediate industrial future of Great Britain.

Distributing the Assets of a Bankrupt.

Ever since the United States Supreme Court decided against the claim of Carson, Pirie, Scott & Co. to share in the estate of a bankrupt from whom they had collected a part of their claim during the four months preceding bankruptcy, the National Association of Credit Men has been organizing a movement to demand the amendment of the law on the ground that it is unjust to a creditor who has collected a part of his claim to exclude him from participation with other creditors in the final division, especially as the creditor who was paid in full is not required to surrender any part of his collections. Many commercial bodies have adopted resolutions asking Congress to amend the law in the direction indicated, and this is one of the many changes which the Ray bill would make in the law.

The points involved can be best understood by remembering that there are, or may be, three classes of creditors during the four months preceding the bankruptcy—the creditors who get paid in full, those who get a part and those who get nothing. The law allows the first two classes to keep all that they have collected during the four months unless it can be proved against them that they knew they were being preferred and received the payments made to them as preferences. As a state of mind, or a state of knowledge, is difficult to prove, this contingency does not often occur. Those who have received full payment and those who have received part payment are treated exactly alike in this respect.

When the debtor goes into bankruptcy those who have been paid in full are, of course, no longer creditors and are eliminated from consideration; the problem is that of distributing the estate between those who have

been paid in part and those who have received nothing. The law says that the former shall receive nothing unless they choose to surrender what they have collected during the four months. It is complained that this is unjust, because those who were paid in full are not required to surrender anything. But those who have been paid in part are not required to surrender anything; they may surrender and take their dividend from the receiver or they may keep what they have collected and get no dividend, because there is a third class of creditors, those who got nothing during the four months. There is not enough to pay every one in full; the more one creditor gets the less there is for the others. The creditor who has been paid in part has got a larger percentage of his claim than the creditors of the third class or else he would in his own interest surrender his collections and take his dividend; that amount of advantage the law allows to his diligence. If he is to have more than this—to keep his collections and also receive a share of the remainder—the creditors of the third class will get just so much less, and just to that extent the purpose of a bankruptcy law, to secure an equal division of the assets among all the creditors, will be defeated. The whole question involved in this discussion is whether the part paid creditor shall have some advantage over the creditor who collected nothing within four months or whether he shall have a much greater advantage.

The bankrupt law was passed mainly because the extent to which preferences were given by insolvents was a grievous injustice to merchants and bankers at a distance; the debtor's relatives, the banker in his town, the jobber of a neighboring city or the jobber who was powerful enough to exact a promise of a preference as a condition of extending credit got all or the greater part of the assets of an insolvent, and the distant creditor got little or nothing. There are now pending in Congress not only the Ray bill and other propositions to amend the law, but half a dozen bills to repeal it, for most of the Western and Southern Representatives voted against its passage and would be glad to repeal it. The complaint against the law is that it prevents preferences. The preference of the relative and the local creditor is openly justified, and the law that interferes with it is denounced as in the interest of creditors in other States.

The law does not entirely prevent preferences; it is doubtful if any law could. But it is not denied by any one that it comes very near to this. Its theory is that all creditors should fare alike; it does not absolutely accomplish that. The creditor who has collected in full within four months fares best, and the one who has collected in part fares better than the one who has not collected at all. But it accomplishes an approximately equal distribution of the assets; it could give the partly paid creditor more only by giving the creditor who has been paid nothing less than at present.

The National Association of Referees in Bankruptcy has sought by circular the opinions of almost 14,000 business houses, with notice that all who did not reply would be counted as satisfied with the law as it stands, and it received less than 800 replies in favor of this change. The American Bar Association has also considered the matter and declared in favor of not allowing the partly paid creditor to participate in the distribution, "so as to receive, by taking such preferences into consideration, a greater percentage of his claims than other creditors of the same class." This scarcely differs from the present law under which the partly paid creditor may surrender his collections and take a share of the estate if he can get more that way than by keeping his collections.

The Carnegie Institution.

The organization of the Carnegie Institution by the selection of its Board of Trustees marks the beginning of the one undertaking due to the liberality of Andrew Carnegie in the devotion of so large a part of his fortune to the purposes of education which seems to be beyond the reach of criticism. The wisdom of most of his openhanded benefactions has been questioned by those who are quite sure they could have suggested uses for his money which would have done more good to humanity and been more generally beneficial to the classes intended to be benefited. It is fair to assume that such criticism has troubled Mr. Carnegie very little. It has never been his habit to deal with any proposition tentatively. Few men have known better what they wanted to do with their own or other people's money than Mr. Carnegie. He has wasted very little time in seeking advice—or, for that matter, in listening to it. Always ready for facts in whatever shape presented, and possessed of unusual skill in their acquisition, he has reserved the right to form his own opinions and act upon them. In devising his schemes of practical philanthropy he has endeavored to advise himself by conference with the broadest minded and best informed persons available for consultation, but what he has learned from them has been weighed in his own microscopic scales, and his conclusions have represented his own views, and only so far as might happen the views of those who have endeavored to shape his opinions.

His plan of the Carnegie Institution was probably suggested by the recommendations of the committee of the National Educational Association, which strongly advised against any attempt to establish a National University, but pointed out the advantages to result to students of science from access to the scientific collections, departmental facilities and technical resources of the National Government. The suggestion was valuable, and not having been intended in any sense to influence Mr. Carnegie, it is not surprising that it had exactly this effect, and was pondered by him as a suggestion of great value, but one impracticable of utilization by the Government, or by any individual not equipped for assisting education on a monumental and magnificent scale. He amplified the suggestion of the committee, reduced it to a practicable plan and forthwith endowed it with a fund of $10,000,000 of interest bearing bonds, to be devoted to original research along lines approved by the trustees. What Mr. Carnegie has in view is stated by himself as follows:

It is proposed to found in the city of Washington, in the spirit of Washington, an institution which, with the co-operation of institutions now or hereafter established there or elsewhere, shall, in the broadest and most liberal manner, encourage investigation, research and discovery; encourage the application of knowledge to the improvement of mankind; provide such buildings, laboratories, books and apparatus as may be needed, and afford instruction of an advanced character to students whenever and wherever found inside or outside of schools, properly qualified to profit thereby.

Among its aims are these:

To increase the efficiency of the universities and other institutions of learning throughout the country by utilizing and adding to their existing facilities and by aiding teachers in the various institutions for experimental and other work in these institutions as far as may be advisable.

To discover the exceptional man in every department of study, whenever and wherever found, and enable him

by financial aid to make the work for which he seems specially designed his life work.

To promote original research, paying great attention thereto, as being one of the chief purposes of this institution.

To increase facilities for higher education.

To enable such students as may find Washington the best point for their special studies to avail themselves of such advantages as may be open to them in the museums, libraries, laboratories, observatory, meteorological, piscicultural and forestry schools and kindred institutions of the several departments of the Government.

To insure the prompt publication and distribution of the results of scientific investigation, a field considered to be highly important.

These and kindred objects may be attained by providing the necessary apparatus for experimental work, by employing able teachers from the various institutions in Washington or elsewhere, and by enabling men fitted for special work to devote themselves to it through salaried fellowships or scholarships or through salaries with or without pensions in old age or through aid in other forms to such men as continue their special work at seats of learning throughout the world.

The more carefully this plan is studied the more its wisdom commends itself to approval. At the present time this country does not need another university. Such institutions should be the result of natural development from colleges of narrower scope, where and when the fruits of such development are needed. The ambitious plan to found a new university naturally takes the form of an architectural nucleus, which is reasonably certain to grow like the miraculous gourd of the prophet Jonah, and to show a capacity to wither with equal facility unless perpetually fertilized by fresh contributions. This was not Mr. Carnegie's ambition. Had it been the $10,000,000 he was willing to devote to the purpose would have been consumed in providing the buildings and equipment deemed necessary for a first-class foundation, and a good deal more than the interest of another $10,000,000 would have been needed to carry on its work. An adequate foundation of this character must have placed at a serious disadvantage the less liberally endowed universities and robbed them of their best professorial talent. It would have lessened the value of their degrees, and instead of promoting the cause of education in this country it would have retarded and embarrassed it. Mr. Carnegie's plan is very much wiser than this. It seeks to encourage and facilitate a line of work for which no existing college or university is, or can be expected to be, equipped. It takes up investigation where the educational institution must leave off, because its duty to the greatest number precludes devoting its always overstrained resources to special lines of research into which the general student of science cannot and does not want to follow. Very little of Mr. Carnegie's gift need be expended in buildings. Laboratories of a temporary character, especially suited to the work to be carried on within them, can be provided as and where they are needed, but will be found not only incomparably cheaper but vastly better adapted to the purposes in view than those of a more costly and more permanent character.

The Carnegie Institution aims to meet a want by reason of the existence of which the higher education in this country has fallen short of the standards reached in parts of Europe, and hitherto deemed impossible here. It is a cause for great congratulation that a man of Mr. Carnegie's "surplus wealth" and liberal disposition had the intelligence to discover this need and provide for it on a scale so magnificent.

W. L. Taylor, superintendent of the Dennison works of the American Sheet Steel Company, at Dennison, Ohio, has resigned, and has been succeeded by Mark McDonald of Carnegie, Pa.

A New White Lead Process.

It is announced that the Brooklyn plant of the Union Lead & Oil Company of 32 Liberty street, New York, will be running before January 15. The principal product of the plant will be white lead, manufactured under a new process. The Brooklyn plant will have a corroding capacity of 12,000 tons annually and a drying and grinding capacity of 15,000 tons. In addition to this the plant will also produce lead oxides, lead pipe, sheet lead and lead traps.

The new process is not in any wise a departure from the principle of the "Old Dutch Process." It consists simply of a method of preparing the lead so as to hasten corrosion. Instead of casting the lead into buckles to be placed in the corroding pots it is transformed into fine filaments. It is known as the Bailey process, and is said to effect perfect corrosion in three days.

In the Bailey process the melted lead is forced by its own gravity through a perforated plate of thin steel, which forms it into threads or hairs about one 1-100 inch in diameter. The lead solidifies and cools almost as soon as it passes the plate, and is transferred to long, shallow trays with slat bottoms. Each of these trays as it receives its charge runs back automatically into place in a suitably constructed bin or rack. When all the trays in this rack have been charged with the fibrous lead the process of corrosion begins. Mingled vapors of acetic acid, moisture, air and purified carbonic acid gas are blown in through suitable openings at the bottom and sides of the rack, and after circulating freely through the mass finally escape. The temperature meanwhile is maintained automatically at the degree most favorable to satisfactory corrosion.

The process is in every respect under absolute control, and any tray with its contents can be withdrawn for examination at any time. Corrosion is completed within three days, and uniformity is more nearly absolute than by any other known process.

The corroded fibers are thrown into water, where they immediately fall into impalpable powder. The cream like liquid from the disintegrating tank is then run, without the necessity of grinding, into a separating cylinder formed of wire gauze with a mesh of 120 strands to the linear inch. This cylinder is partly submerged in water, and as it revolves the fine particles of corroded lead pass through the meshes, while the uncorroded particles, which in this process never rise above 8 per cent., pass out through the end of the separator and, being in a very fine state of subdivision, are in the best possible condition for conversion into lead acetate and other lead salts. There is therefore no rehandling and remelting of the tailing, as in the ordinary process.

The separated lead is finally washed by flotation, and when dried is ready for sale as dry lead. When intended for sale as lead in oil it requires, of course, a run through the mill; but, owing to the fineness of the product, grinding is necessary only to insure perfect assimilation of the oil.

It is proposed to build plants which will be duplicates of the Brooklyn plant at St. Louis and Chicago.

United States Consul-General Bray writes from Melbourne to the State Department, under date November 18, 1901, that he has been informed by the Hon. C. C. Kingston, Minister of Australian Customs, that should the tariff now before Parliament fail to pass in its present form any increase or decrease in duties as now levied will not be charged or refunded to the importer, as was at first intended. Amendments made in the tariff during its passage through Parliament will take effect immediately—*i. e.*, when a change in the original bill is voted or passed by the House of Representatives, the Government at once notifies the Collector of Customs to charge duty from that date, according to such amendment. The Australian Parliament was debating the bill at the date of Mr. Bray's communication, and it was anticipated that two months would elapse before its final passage.

The American Chemical Society.

The twenty-fifth general meeting of the American Chemical Society was held in Philadelphia, Pa., December 30 and 31, 1901. The sessions of the society were held in Houston Hall of the University of Pennsylvania. In extending the welcome of the University of Pennsylvania Dr. Edgar F. Smith, the vice-provost and dean of the chemistry department, said that it was the first institution on this continent in which chemistry was taught, and that the first society of chemists was organized in Philadelphia in 1798. In his response President F. W. Clarke referred to leading chemists and mineralogists who have lived in Philadelphia, which city has furnished four presidents to the society.

The convention on Monday was called to order by J. Merritt Mathews, chairman of the Philadelphia Executive Committee. The reports of the various officers were received and a large portion of the morning session was given over to the reading and discussion of the following papers:

"A Review of Metallography," Henry Fay; "Action of Selenic Acid on Gold" and "Naturally Recurring Telluride of Gold," by Victor Lenher, read by Dr. Edgar F. Smith; "The Quantitative Blowpipe Assay of Telluride Gold Ores" and "A New Blowpipe Reaction for Germanium," Dr. Joseph W. Richards of Denver; "Potassium Perselenate" and "Contributions to the Chemistry of the Rare Earths of the Yttrium Group," L. M. Dennis; "The Determination of Silica," W. F. Hillebrand; "Sodium," J. D. Darling; "The Volumetric Estimation of Alumina, and Free and Combined Sulphuric Acid in Alums," Alfred H. White; "The Determination of Manganese in Iron," W. A. Noyes and G. H. Clay; "Aqua Ammonia; Its Impurities and Methods of Analysis," J. D. Pennock and D. A. Morton; "The Presence of Arsenic in Chemicals and Food Products and the Efficiency of Several Arsenical Methods," L. F. Kebler; "A Method of Analyzing Oil Varnishes," P. C. McIlhiney; "The Sterilization of Water by Peroxide of Chlorine," G. A. Soper; "The Oxygen Bases; a Review," J. L. Horne.

During the afternoon various visiting delegations inspected a number of the large manufacturing plants throughout the city. In the evening the local branch entertained the visitors by a reception at the Acorn Club, at which the retiring president of the society, Prof. F. W. Clarke of the United States Geological Survey, made an address on "The Development of Chemistry."

With the opening of Tuesday's session the Election Committee announced the following election of officers: President, Dr. Ira Remsen of Johns Hopkins University, Baltimore; members of the council to serve three years: Dr. A. A. Noyes of the Massachusetts Institute of Technology, Boston; C. F. McKenna of New York and Dr. T. M. Drown, president of Lehigh University. President-Elect Remsen made a brief speech expressing his gratification for the honor, after which a number of papers were read and discussed. After luncheon those who were not members of the council of the society divided in groups for further inspection of various plants, among which were the Baldwin Locomotive Works, the new United States Mint, Cramps' Shipyard, the United Gas Company's plant at Point Breeze, the Midvale Steel Works, Girard College, Wetherill Bros. White Lead Works and the League Island Navy Yard.

The council of the society held a long executive session during the afternoon, after which the announcement of the following elections by the council were made:

Secretary, Dr. Albert C. Hale of Brooklyn; treasurer, Albert P. Hallock of New York; librarian, E. G. Love of New York; editor, Dr. W. A. Noyes of Terre Haute, Ind.; directors, to serve three years: E. E. Smith and Dr. C. F. Chandler, both of New York.

Committee on Papers and Publications: W. A. Noyes, editor; W. F. Hillebrand, Washington; J. H. Long, Chicago; William McMurtrie, New York; A. A. Noyes, Boston; Edward Hart, Easton, Pa.; Dr. Edgar F. Smith, Philadelphia; H. N. Stokes, Washington; H. P. Talbot, Boston; H. W. Wiley, Washington.

Finance Committee: J. H. Wainwright, Durant Woodman, C. F. McKenna, all of New York.

Committee on Membership: William McMurtrie of Newark; C. L. Reese of Newark, N. J.; E. G. Love of New York.

On Tuesday evening a banquet was held at the Putnam House, more than 100 persons being seated at small tables. The toastmaster was Dr. W. H. Wiley of Washington, D. C., Chief of Chemistry in the Department of Agriculture. Those who made responses were: "Philadelphia," Mayor Ashbridge; "The American Chemical Society," Dr. F. W. Clarke, the retiring president; "The Future," Dr. Ira Remsen, the president-elect; "Chemistry and the Manufactures," Theodore C. Search; "Chemistry and the Humanities," Prof. W. O. Atwater of Middletown, Conn.; "Little Journeys in the World," Prof. John H. Long of Milwaukee; "Our Sister Chemists," Prof. C. F. Chandler of New York; "Our Personal Friends," Prof. J. W. Richards of Lehigh University.

The next meeting of the society will take place in Pittsburgh, Pa., the dates selected being June 30 and July 1, 1902.

German Estimate of the English Iron Industry.

The proposal for a new tariff submitted to the German Imperial Parliament is accompanied by a very elaborate statement in justification of the changes submitted. It is contained in two portly volumes, which also refer at considerable length to the iron and steel industry. A somewhat interesting account is given of the drawbacks from which the German industry suffers, and there is an acknowledgment of the position of Great Britain, which ought to give a good deal of comfort to our English friends. The following is the passage referred to:

"The German iron industry, it is true, has attained a high degree of technical perfection, but this does not alone suffice to compensate for the economic advantages which foreign countries have in the working of iron and particularly in the production of iron. This refers, first of all, to the excellent quality of the iron in America, Great Britain, Spain, Sweden and Austria. So far as Great Britain is concerned, there must be taken into account, too, the exceptionally favorable circumstance that their coal and ore are in close proximity and are located in the immediate vicinity of the coast. The proximity of the sea not alone facilitates the export of finished iron, but also the assembling of the necessary foreign ores, chiefly drawn from Spain. In Germany iron ore deposits and coal veins usually lie at a great distance from one another, and water ways are not available by which the ore can be cheaply transported to the furnace. Thus, for instance, a large part of the ores from Lorraine must be transported by the costly method of rail haul to the works in Westphalia. In those places where, by way of exception, ore and coal are located close together, as in the case of Upper Silesia, the former are low in grade and can only be smelted in conjunction with foreign ores, notably Swedish and Hungarian ores, on which high freight charges must be paid. As to the question of the freight, which has so great an influence upon the profitableness of iron smelting, no average figures can be given, because this cost varies not alone for the different districts, but also varies for the different works in the same district, this depending upon whether it is necessary to assemble ore and coal by water or by rail. It is assumed, however, that in Germany 28 to 30 per cent. of the cost of pig iron is assignable to freights, while in Great Britain only 9 to 10 per cent. are figured. It is owing to the low cost of freight alone that pig iron is produced at about 20 per cent. less in Great Britain than in Germany."

The statement contained in the last few sentences will certainly come as a great surprise to the iron masters of the world, who have been led to believe that the German iron industry rests on a more secure foundation than that pictured.

The Nova Scotia Steel & Coal Company, Limited.

The following statement has been made by the Nova Scotia Steel & Coal Company, Limited, who have succeeded the Nova Scotia Steel Company, Limited:

Capitalization.—Common stock in $100 shares, $5,000,000; preferred 8 per cent. cumulative, in $100 shares, $2,000,000; first mortgage 6 per cent. gold bonds, $2,500,000; total, $9,500,000; of which in the treasury for future needs: Common stock, $1,910,000; preferred stock, $970,000. The mortgage provides for periodical payments after July 1, 1903, to the trustee, of amounts sufficient to redeem the whole issue during the term of the bonds, and a supplementary deed provides that if the quantities of iron ore and coal sold in any one year shall exceed 275,000 tons and 500,000 tons, respectively, an amount equal to 10 cents per ton on such auditional tonnage shall be paid to the trustee and applied toward the redemption of the bonds. These bonds are issued for the purpose of redeeming the short date bonds amounting to $1,500,000, which were issued for the purchase of the property of the General Mining Association; the balance to be applied for the development of the coal mines, the erection of shipping piers, coke ovens, coal washing plant, new furnaces and other improvements.

History.—In January, 1895, the Nova Scotia Steel Company acquired the interests of the New Glasgow Iron, Coal & Railway Company and of the Nova Scotia Steel & Forge Company, and carried on the business previously conducted by these companies until the present year. In the year 1900 the Nova Scotia Steel Company purchased as a going concern the business and property of the General Mining Association, including its leases of the Sydney Mine and Point Aconi areas, which contain a superior quality of coal, with good facilities for shipment. The Nova Scotia Steel & Coal Company, Limited, have acquired the whole business, property and assets of the Nova Scotia Steel Company, Limited, as a going concern.

Property.—The properties now owned consist of:

1. Lands, shafts, buildings, plant and railways used in connection with the coal mines, together with the leases of the coal areas acquired from the General Mining Association. These areas (14,900 acres) extend from Sydney Harbor to the entrance of the Great Bras d'Or, and are estimated to contain 216,000,000 tons of coal. The Point Aconi areas have not yet been worked.

2. About 7824 acres of freehold land in Cape Breton.

3. A freehold iron mine, situated at Bell Island, Concepcion Bay, Newfoundland, and estimated to contain 6,000,000 tons of red hematite ore. [The average iron contents of recent shipments to the United States was over 55 per cent. The mine is equipped for an output of over 300,000 tons during the shipping season; boats of 6000 to 7000 tons capacity have been loaded at the rate of 1000 tons per hour.] Also several deposits of iron ore held by the company, in fee simple or by lease, in Nova Scotia.

4. Leases of coal areas, containing two coal seams of good quality, one of which is now being opened up, situated within 6 miles of the steel works at Trenton.

5. A standard gauge railway, 12½ miles in length, with 3.87 miles of sidings, with rolling stock in Pictou County, Nova Scotia.

6. About 160 acres of freehold land at Ferrona, Nova Scotia.

7. A blast furnace, coal washing and coking plant, built in 1892, at Ferrona, with a capacity of 100 tons of pig iron per day.

8. About 50 acres of land at Trenton, near New Glasgow, on which are the steel works, consisting of four steel melting furnaces, together with the rolling mills, forges and other plant, capable of turning out 100 tons of finished steel per day. Over 4 acres are actually covered by buildings, and the tramways in and about the works aggregate about 4 miles in length.

9. Large limestone and dolomite properties, of excellent quality, in the county of Cape Breton.

10. Net assets represented by cash balances, book debts and stock in trade. (These amounted to $635,789 on January 1, 1901.)

Value of entire property, exclusive of good will, appraised at $4,250,000 to $4,500,000.

Coal and Ore Output.—The coal areas near Trenton are now being opened up, and by the close of the present year that property will supply all the coal required for steam and heating purposes at the steel works, Trenton. In order to increase the output from the Cape Breton areas, which during the past three years has averaged about 250,000 tons per annum, it is intended to open one or more new collieries on the property, by which it is estimated that the output will be increased to about 600,000 tons per annum. The company have sold for delivery during the present year about 300,000 tons of their iron ore, of which 60,000 tons were sold for delivery in Philadelphia, and about 240,000 tons in Germany and Scotland; and the company have already sold for delivery in Germany 160,000 tons in 1902 and 120,000 tons in each of the years 1903-4-5, all at prices which should yield a satisfactory profit to the company.

Profits.—The profits of the combined business for the year 1900, exclusive of bounties, as certified by the auditors, amounted to $530,581, and for the three years, 1898-1900, averaged $379,380 yearly. In addition the company received by way of bounties on pig iron and steel ingots from the Government of Canada, $398,506, being a yearly average of $132,835. The total profits for the three years, including bounties, amounted to $1,536,646, being a yearly average of $512,215. These results, so far as the coal mines are concerned, were obtained notwithstanding the inefficiency of the mining plant at Sydney Mines. From the proceeds of the present issue of bonds the mines will be equipped with modern machinery and plant. Unless further legislation is enacted the bounties payable by the Government of Canada will be reduced annually after April 23, 1902, and will expire on June 30, 1907.

Statement of Former Nova Scotia Steel Company for Year Ending December 31, 1901.

Profits for the year	$655,273
Balance brought forward	47,883
Total available	$702,156
Deduct:	
Dividend, 8 per cent. on preferred stock	$82,400
Interest on mortgage bonds (replaced by new issue of 1901)	45,726
Depreciation	20,000
Reserve for bad debts	10,000
Plant renewals	200,000
Dividend on 10 per cent. ordinary stock, paid March 9, 1901	103,000
Balance, surplus	$242,030

Estimated Future Average Yearly Profits After Development Provided for Above.

From sale of 275,000 tons (2240 pounds) of iron ore at 70 cents	$192,500
From sale of 500,000 tons (2240 pounds) of coal at 80 cents	400,000
From iron and steel works	150,000
Being a yearly average profit of	$742,500
Deduct interest on bonds at 6 per cent. and sinking fund.	$200,000
Dividend on preferred stock at 8 per cent	82,400
Leaving for dividends on common stock, depreciation and reserve	$460,100

The Roney Stoker at the Manhattan Railway Power Plant.—Roney mechanical stokers are being installed in the Manhattan Railway power plant by Westinghouse, Church, Kerr & Co. It was estimated by the engineers for the Manhattan Company that at least 270 men would be required to fire these boilers by hand, whereas with the Roney stokers this force can be reduced to 90 men, a saving in labor alone of over $400 per day. Another important advantage gained by the adoption of this stoker is the fact that it will permit of the use of hard or soft coal, either separately or mixed. For this no alteration is required in the arrangement or construction of the stoker, merely a different adjustment of the feed and grate actuating mechanism. The supply of coal fed to the furnace is regulated by the feed wheel and the motion of the grate bars by the position of the lock nuts, which adjustments are easily made by any fireman. The present installation will consist of 256 stokers under the 64 boilers of 525 horse-power each, and they will be capable of developing 50 per cent. above the rated capacity of the boilers.

The total equipment when the plant is completed as designed will consist of 384 stokers attached to 96 525 horse-power boilers; a total of 50,000 horse-power, making this the largest boiler plant ever designed or installed. Roney stokers are also being installed in all the other large power stations of New York City—namely, New York Edison Company, 244 stokers, 35,000 horse-power boilers; Third Avenue Street Railway Company, 240 stokers, 31,500 horse-power boilers, and Metropolitan Street Railway Company, 174 stokers, 25,000 horse-power boilers.

The United States Steel Corporation in the Pittsburgh Coal Field.

The United States Steel Corporation have arranged to produce their own supply of coal in the Pittsburgh district by the development of 50,000 acres, worth approximately $10,000,000. The work of development will be started at once by a subsidiary company, the National Mining Company, of which President Thomas Lynch of the H. C. Frick Coke Company is the head. The National Mining Company, which will be the coal producing interest of the United States Steel Corporation in the Pittsburgh district, will open their first mine in the Panhandle field, 14 miles from Pittsburgh, in the Chartiers Valley, where 7500 acres of coal property will be developed. Contracts have already been placed for the electric hauling and other modern equipment, and this first mining plant is to be in operation before the end of the year. Before this property begins to produce, the work of opening other properties will be started. The Steel Corporation plants in the Pittsburgh district, aside from the Carnegie Steel Company, consume about 3,500,000 tons annually, and the operations of the National Mining Company are to supply this tonnage. Contracts with existing interests will expire by the time the new company are ready to supply the coal. F. A. McDonald, formerly assistant chief engineer of the Pittsburgh Coal Company, is chief engineer of the National Mining Company, and is superintending the development in the Pittsburgh district. Headquarters have been opened in the Empire Building, adjoining other subsidiary concerns of the Steel Corporation.

Foreign Visitors and American Practice.

From time to time foreign manufacturers make flying visits to this country, run hastily through the centers of trade pertaining to the lines they are interested in, make a few notes upon salient features, and upon their return go before meetings of their brethren in the same business and report what they have seen. With few exceptions there is little or no interest shown, and not the least intention manifested of adopting our methods. Quite recently a British steel maker came here and to Pittsburgh, Youngstown, Chicago and other places where the mills were thrown open to his inspection from end to end cheerfully, and he came away much impressed. He told his coadjutors that he saw a wire rod mill here that turned out 2300 tons per week, while in his own works the best that could be done was 400 tons. He further said that what struck him the most was that the work was kept constantly going. From the time an ingot was taken from a soaking pit it never stopped until it was in the finished shape, and there was no reason why they could not do the same if they would only infuse a little more energy into their establishments. In Boston he saw two wire rods rolled at once, whereas in his own mills it took all their time to look after one rod. The manufacturer seemed to think the absence of energy and enterprise lay in a lack of intelligence, for one thing, in their men, and for another, want of co-operation on the part of the employers. These last felt that if they put in new machines the men would get all the benefit of them, while the men considered that if the output was increased they were being robbed of work they would have had under the old system. It is fair to say that these commentaries were a correct summing up of the situation as we see it, viewed from both sides, but they were by no means to the taste of the hearers of them and will not be acted upon.

The Babcock Tariff Bill.

WASHINGTON, D. C., January 14, 1902.—Representative Babcock of Wisconsin, who presented a crudely drawn bill in the last Congress transferring a large part of the metal schedule to the free list, has prepared a much more important measure which he will introduce in the House to-morrow, the 15th inst., and which he will endeavor to bring to the attention of the majority leaders of the House by laying it before a specially called caucus of the Republicans.

Mr. Babcock's new bill adds five new paragraphs to the free list; transferring thereto all iron in slabs, blooms, &c.; all structural iron and steel; boiler or other plates of iron or steel, except crucible plate steel and saw plates, not thinner than No. 10 wire gauge, and valued at not more than 1½ cents per pound; all railway bars of iron or steel; T rails and railway fish plates, &c., and steel ingots, blooms, slabs, billets, bars, &c. In addition, Mr. Babcock reduces by a general average of nearly 50 per cent. the present duty on the principal manufactures of iron and steel which are not transferred to the free list. The duty on pig iron, for example, is reduced from $4 to $2 per ton; iron rods are cut from 8-10 cent per pound to 4-10 cent; hoop, band or scroll iron or steel is reduced one-half in rate, the existing relation with reference to gauge being maintained. Cotton ties are cut from 5-10 cent per pound to ¾ cent; steel sheets are reduced from 7-10, 8-10, 1 1-10 and 1 2-10 cents per pound, to 4-10, 5-10, 6-10 and 7-10, respectively, according to gauge, and tin plate is cut from 2-10 cent per pound to 1-10 cent.

Other reductions ranging from 40 to 60 per cent. are made in the principal paragraphs of the metal schedules and the basket clause, covering articles or wares not specially provided for in this act, composed wholly or in part of iron or steel, is reduced from 45 to 30 per cent. ad valorem, while articles composed of lead, copper, nickel, pewter, zinc, gold, silver, platinum, aluminum, or other metals are left at 45 per cent.

Mr. Babcock's plan for securing consideration for his bill is rather a novel one. He concedes that the Ways and Means Committee will not report the measure favorably unless directed to do so by the party caucus. Under the rules, however, a caucus can be called by a petition signed by a dozen members, and as Mr. Babcock can easily secure the necessary signatures he proposes to summon a caucus and lay his bill before it together with a motion to make it a caucus measure. He claims to have between 50 and 60 votes for the bill, and he thinks that a little missionary work will develop enough more to give him the hundred necessary to the adoption of a caucus measure. This would appear to be a very sanguine view, and the majority leaders claim that Mr. Babcock's measure will be signally defeated. Mr. Babcock is calculating upon securing support for the measure on the ground that it will reduce what he refers to as the "extraordinary profits of the steel trust," while at the same time it "will not injure the independent producer who is not obliged to pay dividends on watered stock." The bill will naturally attract considerable attention in view of Mr. Babcock's prominence in the House, where he is not only a member of the Ways and Means Committee, but chairman of the Republican Congressional Committee. W. L. C.

The International Car Wheel Company, organized in June, 1899, under the laws of New Jersey, have taken over the management of the New York Car Wheel Works and the P. H. Griffin Machine Works, both Buffalo concerns, and of the Michigan Iron Company of Detroit. They have acquired the stocks of the corporations named, and real estate in Buffalo and Detroit, and have made a mortgage to the North American Trust Company of New York as trustee to secure $600,000 6 per cent. gold bonds. The bonds are dated December 23, 1901, and are due December 23, 1911, but subject to call at par on any interest day. The authorized capital stock is $10,000,000 of common and $5,000,000 of 7 per cent. cumulative preferred stock.

A Decline in Pig Iron Production.

Stocks Show Little Change.

The furnace capacity working on January 1 reflects to some extent the troubles which have beset the managers during the last two months of the year. Quite a number of stacks have been blown out, and others have been banked again and again during December. Stocks of anthracite and coke iron show little change, so far as the total is concerned. This is due to the fact that some of the makers have been unable to ship their current make, and in some cases, notably in the South, have accumulated some iron. It is probable that if figures were available for consumers' stocks a considerable absorption of iron would be shown.

The weekly capacity of the furnaces in blast on January 1 compares as follows with that of the preceding periods:

	Furnaces in blast.	Capacity per week. Gross tons.
January 1, 1902	264	298,460
December 1, 1901	266	324,761
November 1	259	320,824
October 1	246	307,982
September 1	255	299,861
August 1	257	303,847
July 1	249	310,950
June 1	252	314,505
May 1	256	301,125
April 1	250	296,676
March 1	248	292,899
February 1	245	278,258
January 1	233	250,351
December 1, 1900	211	228,846
November 1	201	215,304
October 1	213	223,169
September 1	228	231,778
August 1	240	244,426
July 1	284	283,413
June 1	293	296,376
May 1	292	293,850
April 1	291	289,482
March 1	293	292,643
February 1	296	298,014
January 1	280	294,186
December 1, 1899	283	296,959
November 1	277	288,522
October 1	265	278,650
September 1	257	267,335
August 1	244	267,672
July 1	237	263,363
June 1	220	251,062
May 1	217	250,095
April 1	205	245,746
March 1	192	228,195
February 1	195	237,639
January 1	200	243,516

The disturbances created by the inability of the railroads to handle the business offered to them have lessened the output considerably and have rendered the figures of capacity compiled by us a less reliable index of production than they usually are. We print below the actual production of coke and anthracite pig iron in the different States and districts, which makes it possible to trace the effect of the coke scarcity. It will be observed that the Pittsburgh and the Chicago districts have been the principal sufferers. In dealing with quantities so large, of course, the fact must be taken into account that October and December have 31 days, while November has 30 days.

Monthly Production of Anthracite and Coke Pig Iron.—Gross Tons.

	October.	November.	December.
New York	24,159	25,910	32,002
New Jersey	17,837	17,882	17,737
Schuylkill Valley	37,222	42,281	38,621
Lehigh Valley	39,658	41,444	41,183
Upper and Lower Susquehanna and Lebanon	68,638	65,784	56,427
Pittsburgh	310,473	343,878	284,052
Shenango Valley	88,700	92,875	90,750
Western Pennsylvania	82,779	74,102	75,833
Maryland, Virginia and Kentucky	75,184	68,858	57,058
Wheeling district	54,431	58,573	46,822
Central and Northern Ohio	115,981	96,373	87,878
Mahoning Valley	129,276	108,342	128,056
Hanging Rock and Hocking Valley	30,096	29,669	30,341
Illinois, Wisconsin, Missouri and Colorado	187,002	170,332	155,266
Alabama	95,200	97,647	104,379
Tennessee	25,560	28,001	27,903
Totals	1,382,196	1,361,951	1,274,308

The October output exceeded the estimates, based on September records. In November, however, the make fell considerably below the capacity as revealed by the status of works on the first of that month. December, with an even greater capacity in blast, showed a still further decline in actual product owing to the causes which have been fully discussed from week to week. On the other hand, it is likely that the January product, should the betterment in the conditions continue, will be larger than the status of the furnaces early in the month would indicate.

The condition of the coke and anthracite furnaces at the beginning of the month was as follows:

Coke and Anthracite Furnaces January 1, 1902.

Location of furnaces.	Total No. of stacks.	Number in blast.	Capacity per week.
New York	14	6	7,226
New Jersey	7	3	3,014
Spiegel	3	3	536
Pennsylvania:			
Lehigh Valley	28	16	8,739
Spiegel	1	1	121
Schuylkill Valley	15	11	8,405
Upper Susquehanna	1	0	0
Lower Susquehanna	10	7	5,300
Lebanon Valley	12	9	6,420
Pittsburgh District	34	32	70,204
Spiegel	1	1	2,760
Shenango Valley	17	16	21,634
Western Pennsylvania	20	14	16,031
Spiegel	1	1	1,093
Maryland	5	3	4,343
Wheeling District	10	7	8,782
Ohio.			
Mahoning Valley	15	14	26,701
Central and Northern	14	12	21,517
Hocking Valley	3	1	452
Hanging Rock	12	10	6,400
Illinois	17	13	27,550
Spiegel	1	1	946
Minnesota	1	0	0
Wisconsin	5	0	0
Missouri	1	0	0
Colorado	3	3	3,953
The South:			
Virginia	20	15	7,935
Kentucky	5	4	1,738
Alabama	39	26	23,570
Spiegel	1	1	263
Tennessee		11	6,359
Georgia	1	0	0
North Carolina	1	0	0
Totals	318	241	291,992

In comparison with previous months the record of the coke and anthracite furnaces stands as follows in gross tons:

	Number in blast.	Capacity per week.
January 1, 1902	241	291,992
December 1, 1901	241	317,358
November 1	237	313,775
October 1	221	300,538
September 1	233	293,256
August 1	235	297,269
July 1	227	303,793
June 1	232	306,991
May 1	233	293,915
April 1	225	288,766
March 1	222	284,825
February 1	214	278,258
January 1	201	243,254
December 1, 1900	179	222,067
November 1	171	207,381
October 1	182	214,921
September 1	197	223,551
August 1	209	236,131
July 1	252	274,921
June 1	266	288,771
May 1	267	286,956
April 1	262	281,644
March 1	264	285,596
February 1	264	290,010
January 1	250	286,729
December 1, 1899	253	284,448

There were blown out during December Stanhope in New Jersey, one Swede in the Schuylkill Valley, one Saucon in the Lehigh Valley, one Monongahela in the Pittsburgh district, one Lackawanna in the Upper Susquehanna Valley, Blue Mountain in Maryland, Buena Vista in Virginia, two Bellaire in the Wheeling district, one Union, one Bay View and Mayville in the Chicago district, and one Missouri. There were started during the month one Edgar Thomson, the new Sharon Steel furnace, Ivanhoe and Covington in Virginia, and one North Birmingham, one Bessemer and one Sheffield in Alabama.

The condition of the charcoal furnaces at the beginning of the month was as follows:

Charcoal Furnaces January 1, 1902.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.
New England	7	3	171
New York	3	1	683
Pennsylvania	13	2	89
Maryland	2	1	94
Virginia	3	1	33
Ohio	9	2	139
Kentucky	3	0	0
Tennessee	3	1	85
Georgia	4	1	320
Alabama	4	3	641
Michigan, Missouri and Wisconsin.	10	7	4,013
Oregon	1	1	200
Texas	4	0	0
Totals	66	23	6,468

As compared with previous months the record of active charcoal furnaces stands as follows:

	Furnaces in blast.	Capacity per week.
January 1, 1902	23	6,468
December 1, 1901	25	7,403
November 1	22	7,049
October 1	25	7,444
September 1	22	6,605
August 1	22	6,578
July 1	22	7,157
June 1	22	7,514
May 1	23	7,210
April 1	25	7,910
March 1	26	8,074
February 1	31	8,335
January 1	32	7,097
December 1, 1900	32	6,779
November 1	30	7,923
October 1	31	8,248
September 1	31	8,227
August 1	31	8,295
July 1	32	8,492
June 1	27	7,605
May 1	25	6,894
April 1	29	7,838

Among the charcoal furnaces Muirkirk in Maryland resumed, White Rock in Virginia was blown out, as were also Bloom, Center and Madison in Ohio.

Furnace Stocks.

The position of furnace stocks, sold and unsold, as reported to us, was as below on January 1, as compared with the five preceding months, the same furnaces being represented as in former months. This does not include the holdings of the steel works producing their own iron:

Stocks.	Aug. 1.	Sept. 1.	Oct. 1.	Nov. 1.	Dec. 1.	Jan. 1.
Anthracite and Coke	328,787	318,069	299,824	223,089	181,021	179,993
Charcoal	58,542	62,005	61,769	50,162	42,441	36,144
Totals	387,329	380,074	361,593	273,251	223,462	216,137

George Wright, 121 Fulton street, New York, publisher of Wright's Foreign Trade Directory and Gazetteer, has just issued Wright's Catalogue of America's Greatest Manufacturers in the Engineers' and Metal Trades. The book contains 653 pages, each 13½ x 10½ inches, and is cloth bound. In the front there are a number of striking views of important American buildings and scenes, with accompanying descriptive matter. The balance of the work is made up of advertisements of representative American manufacturers. This book is distributed gratuitously abroad in various quarters of the globe.

MANUFACTURING.

Iron and Steel.

The Riter-Conley Mfg. Company, Pittsburgh, have received a contract for the steel buildings, storage tanks and other heavy structural work for a large oil refinery which the J. M. Guffey Petroleum Company will build at Port Arthur, Texas. It is said the value of this contract aggregates nearly $1,000,000. The Riter-Conley Mfg. Company have built a very large amount of structural iron work for the oil fields in Texas, and have a large force of mechanics in that field constantly doing work.

In December the Ohio works of the National Steel Company, at Youngstown, Ohio, broke all previous records of output. The total ingots made was 56,098 tons; ingots rolled, 55,042 tons; finished billets, tin and sheet bars, 47,774 tons. On December 12 the converting mill turned out 2780 tons and the finishing mill 2440 tons.

The blast furnace of the Struthers Furnace Company, at Struthers, Ohio, which has been recently rebuilt, was put in blast last week, a sufficient supply of coke having been received to warrant starting the furnace.

The tin plate mill at Johnstown, Pa., owned by the American Tin Plate Company, is being dismantled, and the two tin mills which it contained are being shipped to Monessen, Pa.

The Canton Crucible Steel Company, Canton, Ohio, manufacturers of high grade steel of all kinds, have been incorporated under the laws of West Virginia with a capital of $20,000. This was done to enable the firm to enlarge their plant to take care of their increasing trade. The concern advise us that they have increased their output of steel about 500 per cent.

The Crawfordsville Wire & Nail Company, Crawfordsville, Ind., have completed their financial arrangements, and have placed contracts for the erection of new buildings to take the place of those recently burned. The contracts have been made with a view to the completion of the buildings early in the spring for the purpose of resuming manufacturing operations as speedily as possible. The new buildings will be made as nearly fire proof as possible.

The Champion Rivet Company of Cleveland have purchased 9 acres of land at Parnassus, Pa., and will erect a new rivet making plant. It will be put in operation next summer. The rumor was circulated in Cleveland that the United States Steel Corporation were back of the venture, and were seeking to combine all rivet making plants. This was denied by officials of the Champion Company, who state that the plant will be built to meet the increased demand for goods. It is also denied that the new plant would mean the removal of the present plant from Cleveland.

General Machinery.

The Davis & Furber Machine Company, North Andover, Mass., manufacturers of textile machinery, are enlarging their plant by an addition 41 x 65 feet.

The Jones Automatic Stoker Company, Chicago, have been licensed to incorporate with a capital stock of $50,000, the incorporators being James P. Grier, Wm. H. Tuttle and N. Cross.

The Nazareth Foundry & Machine Company, Nazareth, Pa., who were organized in the spring of last year, finished an entirely new building September 1, since which time they have found it necessary to add a new pattern shop of two stories, 50 x 24 feet. The main building is 180 x 62 feet. The machinery installed is of the latest type and embraces a 100-inch Betz boring mill; a Dreses, Mueller & Co. 72-inch radial drill; a 48-inch by 24-foot lathe, and several smaller machines, consisting of lathes, planers, shapers, milling machines and gear cutters. The company manufacture knitting mill, slate, cement and agricultural machinery, and make a specialty of fine castings, both light and heavy. They also do a general line of repair work, and carry a stock of engineers' supplies, including pipe fittings, cold rolled shafting, hangers, &c. Since commencing the works have been fully engaged, and it is in contemplation to increase the capacity of the foundry in a few months. The president of the company is Conrad Miller, formerly owner of the Bangor & Portland Railroad; vice-president, G. A. Schneebeli, prominently identified with the industries of Nazareth; secretary, J. J. Heintzelman, who has long been connected with railroad interests, and treasurer, W. T. Swartz, a well known business man of Nazareth. The superintendent and manager is R. J. Kellogg, who was foreman of the No. 2 machine shop of the Bethlehem Steel Company, Bethlehem, Pa.

Wm. Bartley & Sons, Bartley, N. J., manufacturers of saw mill machinery, had a fair average business during 1901, and have good prospects for the present year. They have orders for saw mills from Liberty, Sullivan County, N. Y., and also from Oil City, Pa., and have promises of orders from the State of North Carolina and Seattle, Wash.

The Foster & Brown Company, recently incorporated, are a reorganization of the firm of Foster & Brown, Westbrook, Maine, machinists and iron founders. The management will be the same as heretofore, the only change being in the name.

The original members of the company and Paul D. Wampler have incorporated the Cyclone Drilling Machine Company, Orrville, Ohio. The new company will double the capacity of the plant and install considerable new equipment.

The Jeanesville Iron Works Company, Jeanesville, Pa., will considerably enlarge their plant and nearly double its capacity. The plans embrace a 75-foot addition to the machine shop, which will also be widened its entire length, and the rebuilding and enlarging of the foundry. In the latter a 15-ton traveling crane will be installed. The company make mine and pumping machinery.

The town of Bennettsville, S. C., will, within the next 60 days, issue the necessary bonds for the erection of an electric light plant, and shortly thereafter will be ready to purchase the entire equipment or let out contracts for the erection and installation of the plant. They would like to employ a competent electrical engineer to prepare the plans and specifications, and assist in letting the contracts and installing the plant and testing it when completed. J. M. Jackson has charge of the matter.

K. Sida, a representative of the Imperial Japanese Navy, was the guest of the Niles Tool Works Company, at Hamilton, Ohio, a few days ago. He is in America for the purpose of placing orders for machine tools for a new shipbuilding plant which Japan proposes to establish. He will visit Pittsburgh, Philadelphia and New York, and will then go to Washington, where he will be entertained by the Japanese Minister. Later he will go to Europe.

The Bessemer & Lake Erie Railroad has started work on the erection of a new machine shop, at Greenville, Pa., to be 120 x 128 feet.

The Wheeling Roofing & Cornice Company of Wheeling, W. Va., have increased their capital stock from $50,000 to $500,000, and plans have been made for the erection of a new plant at New Martinsville, W. Va. Two buildings will be erected, one 90 x 220 feet, and the other 60 x 120 feet. A large amount of modern machinery will be installed.

The Pennsylvania Railway are making plans to make extensive additions to their repair shops at Columbus, Ohio. An electric light and power plant will be installed, the machine shop will be enlarged, new boiler shops built and a new brick round house erected.

The Cincinnati, Hamilton & Dayton Railway is reported to have adopted plans for $150,000 worth of improvements to be made at the main shops at Lima, Ohio. New machine and boiler shops will be erected.

Directors of the Lake Erie, Alliance & Wheeling Railroad Company have decided to locate their repair shops in Alliance, Ohio.

The Wheeling & Lake Erie Railway are laying out plans for extensive improvements to their shops at Norwalk, Ohio. The capacity of the machine shops will be more than doubled, and it is stated that $100,000 worth of new machinery will be installed.

The Davis, Walker & Cooper Company of Youngstown, Ohio, were incorporated last week with $50,000 capital stock by James Cooper, F. B. Davis, Charles Walker, Evan J. Davis and H. L. Davis. They have taken options on three sites in Youngstown, and will proceed to erect a plant for the manufacture of machinery and forgings. They have also purchased the Walker Engineering Works of that city. Hubbard, Ohio, has made a bid for the plant.

The Mansfield Engineering Company of Mansfield, Ohio, are being organized with a capital stock of $100,000 by the stockholders of the Century Mfg. Company of that city. Plans have been prepared for buildings as follows: Erecting room, 195 x 75 feet; structural and blacksmith shops, 80 x 130 feet; pattern shop, 44 x 136 feet, and power house, 40 x 50 feet.

The Canton Roll & Machine Company, Canton, Ohio, will erect an addition to their plant.

The Kent Machine Company, Toledo, Ohio, have plans on exhibition at the Toledo Builders' Exchange for a two-story factory building, to cost $65,000.

The Coe Mfg. Company of Painesville, Ohio, heretofore a partnership company, have been reorganized and incorporated with a $125,000 capital stock. H. H. Coe is president; H. P. Coe, vice-president; Frank Morey, secretary. The company are the largest makers of veneer machinery in the country. They have just completed a new plant, and will add new machinery to increase the capacity.

Formal transfer of the pneumatic hoist department of the Chisholm & Moore Mfg. Company, Cleveland, to the Chicago Pneumatic Tool Company, was made last week. Revenue stamps attached to the instrument indicated that the value of the property was $125,000.

It is stated that the Big Four Railway is preparing plans for extensive additions to its repair shops, at Bellefontaine, Ohio.

Boilers, Engines and Accessories.

The La Crosse Gas & Electric Company, La Crosse, Wis., are purchasing the equipment for the improvements they are making to their plant at a cost of about $100,000. New boilers, electric generators and gas engines will be installed in the electric station; a new retort house is being erected in connection with the gas plant, and they expect to lay several miles of gas mains, together with services, and to place from 500 to 1000 gas ranges this coming summer.

The Hodge Boiler Works, established in 1865, have incorporated and moved into their new shop on Sumner street, East Boston, Mass., where they will have increased facilities for turning out marine and stationary boilers, tanks, &c. John E. Lynch is treasurer.

The United States Government have placed with the Pittsburgh Boiler Scale Resolvent Company, Park Building, Pittsburgh, Pa., an order for 1000 pounds of boiler compound, to be used in the boiler of the ice plant at the military hospital at Iloilo, Philippine Islands, where the water is highly impregnated with lime and salt. The company have during the past year shipped boiler compound for the Government to the Philippine Islands.

The Manitowoc Steam Boiler Works, Manitowoc, Wis., are doing a large amount of heavy marine and stationary boiler work, but are principally engaged in building digesters for paper manufacturing. These digesters are large steel shells, requiring for their construction high grade open hearth steel plates, from 1⅛ to 1⅝ inches in thickness. They are completing two large orders for New York State, consisting of three digesters for the Union Bag & Paper Company's plant at Sandy Hill, each 15 feet in diameter by 49 feet long, and three for the Battle Island Paper Company's mills at Fulton, each 14 x 41 feet. They are also building a second digester, 15 x 36 feet, for the George Friend Paper & Tablet Company, West Carrollton, Ohio. During the past year they completed two of the largest digesters ever built in this or any other country for the Sault Ste. Marie Pulp & Paper Company of Sault Ste. Marie, Ont. These digesters were 17 x 54 feet, built of 1¼ and 1⅜ inch plates, and weighed 110 tons each. They have in hand a number of orders for marine boilers, among them being two for James Corrigan of Cleveland, each 12½ feet in diameter by 12 feet in length, to carry 175 pounds steam pressure. They report the outlook for business, both for digesters and boilers, never better than at present, and believe they could keep their shop full of work if it were twice as large. Their digesters are being used in paper mills in all parts of this country and Europe.

The Ashcroft Mfg. Company, Bridgeport, Conn., manufacturers of steam gauges, are building a one-story addition to the forge shop and brass foundry. All equipment has been purchased.

The Toledo Marine Boiler Company, recently organized at Toledo, Ohio, have prepared plans for a $20,000 building. Contracts have already been placed for about $30,000 worth of new machinery. It is expected the plant will be in operation by May 1.

A syndicate have been formed at Mansfield, Ohio, to purchase the city water works plant, thoroughly rebuild it, and operate the water supply system of the town under a 25-year franchise. The plant is in need of immediate repairs.

The village of Cuyahoga Falls, Ohio, has sold $5000 in bonds to purchase a new engine and dynamo to furnish city lighting, and to be operated in connection with the water works.

The Chillicothe Railway, Light & Power Company, Chillicothe, Ohio, are preparing to erect a large power house to take care of an extension of their railway. Joseph Myers is superintendent.

The De Beers Consolidated Diamond Mines, Limited, of Kimberley, South Africa, have just awarded contracts to American concerns for the erection and equipment of a mammoth power plant. Milliken Bros. of New York have been awarded the contract for erecting the plant, while the Westinghouse Electric & Mfg. Company have been awarded the contract for equipping the plant with two turbines of 1000-kw. capacity each. The contract for the turbines is the first secured by the company for export purposes.

Foundries.

The Magnatite Foundry Company, St. Louis, Mo., are making a number of improvements at their plant. A new core oven is being installed, the foundry is being fitted with track facilities, the electric equipment and the lines supplying compressed air are being extended.

The Johnson-Jennings Company of Cleveland have placed a contract for the erection of a large foundry building in addition to the large plant now under construction. Kaltenbach & Griess of Cleveland are engineers.

The Craig Foundry Company of Toledo, Ohio, have secured a contract from the Westinghouse Electric & Mfg. Company for 1800 tons of castings to be delivered at the rate of 300 tons per month. The bulk of the castings will weigh from 15 to 30 tons each, and will be used in generators manufactured by the Pittsburgh company. The contract will necessitate increasing the capacity of the foundry.

The Cambridge Foundry Company and the Cambridge Mining Car Company of Cambridge, Ohio, will be consolidated and a large plant will be erected in that place for the production of both lines.

The Marion Malleable Iron Company, Marion, Ohio, have elected officers as follows: E. Huber, president; D. W. Murphy, vice-president, and J. A. Huber, secretary-treasurer. A three per cent. dividend was declared at the recent annual meeting, and a balance set aside for improvements.

Bridges and Buildings.

Bids will be received to February 4 by the county commissioners at Hamilton, Ohio, for a steel bridge over Dry Fork. Christopher Pabst is county auditor.

Fires.

The Milton Leather Board Mills, Milton, N. H., were destroyed by fire January 8, causing a loss of about $50,000.

The powder works, 2 miles from Clearfield, Pa., owned by James Kerr, were destroyed by fire January 9. The loss is about $20,000. It is understood that the works will be rebuilt.

Lewis Sands' saw, shingle and stave mill, at Manistee, Mich., was destroyed by fire January 10. The loss on machinery and buildings is estimated at $100,000, with $60,000 insurance.

The plant of the Waltham Emery Wheel Company, Waltham, Mass., suffered a $25,000 loss by fire on January 10. The loss is covered by insurance.

The plant of F. M. Locke, Victor, N. Y., manufacturer of insulator pins, was destroyed by fire last week. The loss will reach about $50,000, partly covered by insurance.

The foundry of Peter Lippert, Kenosha, Wis., was destroyed by fire on January 7; loss about $10,000.

The rolling mill of the National Enameling & Stamping Company, at St. Louis, Mo., was damaged to the extent of $75,000 by fire on January 14.

Hardware.

Rogers Screw Company, Providence, R. I., are installing new machines which, it is stated, will double the present output of the plant. The expectation is that the new machinery will make a material difference in the earning power of the factory, the increase in production, we are advised, being effected without additional cost.

Barnes Mfg. Company, manufacturers of pumps, &c., Mansfield, Ohio, report 1901 business as the largest in their history. During the year their capacity was increased 25 per cent., and they have been running every day except holidays and shut down only three days for invoicing instead of ten days or two weeks as usual.

Voss Bros. Mfg. Company, Davenport, Iowa, manufacturers of the Ocean Wave washing machine, have just let a contract for another building, which will double their capacity. This makes the third addition to their factory within the last six months and shows the growing popularity of their washer. The company are over 400 machines behind their orders and are kept busy apologizing for the delay in shipments, and asking the trade to bear with them for a short time until they get in shape to ship more promptly.

Columbus Forge & Iron Company, Columbus, Ohio, have just been authorized to increase their capital stock from $50,000 to $125,000. Among other improvements and extensions they have been making during the past summer and fall is a shop for the manufacture of high grade solid box vises, which the company are now prepared to make shipments of.

The Watrous Mfg. Company, East Hampton, Conn., manufacturers of bicycle specialties and toys, whose plant was destroyed by fire recently, have rebuilt and have in operation that part of their works devoted to the making of bicycle specialties, and, we are advised, will in the early spring build an addition for the manufacturing of toys.

The Industrial Mfg. Company, Phœnix, N. Y., have recently been organized. They will manufacture automobiles, motor cycles, bicycle brakes, &c.

J. L. Claudin, Morton, Ill., has invented a new fence machine, and expects to build a factory at that point for the manufacture of woven wire fence.

The directors of the Safety Corn Husker & Shredder Company, New Castle, Ind., at their last meeting, decided to enlarge their business. It was also decided to issue $50,000 worth of preferred stock, which is to be divided into 500 shares.

Miscellaneous.

The St. Joseph Plow Company, St. Joseph, Mo., have increased their capital stock to $125,000, and expect in the near future to increase their capacity.

The business of the Merkel Mfg. Company, Geo. Merkel, proprietor, Milwaukee, Wis., manufacturers of motor cycles, hydrocarbon motors and bicycle hubs, has been incorporated under the same name with a capital of $32,000. The new company expect to enlarge the present plant and will shortly put on the market a line of direct connected generating sets, consisting of a dynamo direct connected to a gasoline motor of high speed, inclosed crank case type. These sets are intended for small isolated lighting plants. The officers are Theodore Jones, president; O. C. Uehling, vice-president; W. J. Merkel, secretary and treasurer, and J. F. Merkel, manager.

The Bonnot Company, Canton, Ohio, manufacturers of clay working machinery, have purchased the Penfield shops in Louisville, Ky., into which they will move the department of their business devoted to the manufacture of hot air furnaces.

The Pliable Veneer Company, Pawtucket, R. I., recently organized, have leased a shop where they will make a substitute for wood veneers. Later they intend to erect a plant. Address correspondence to J. W. Meiklejohn, 45-47 Park place.

The Wellsville Refining Company, Wellsville, N. Y., capitalized at $100,000, have broken ground for the erection of an independent oil refinery with a capacity of 1000 barrels per day. They expect to be in operation by April.

The Bessie Minge Mfg. Company, Demopolis, Ala., recently organized with a capital of $100,000, have secured a site in that city upon which they will erect a new plant. They expect to commence operations by July. All machinery has been purchased. The officers are J. H. Minge, president; W. C. Harrison, vice-president, and J. C. Minge, secretary and treasurer.

The business of Augustin Fuller, 35 South William street, New York City, mechanical engineer and contractor of sugar machinery for export, has been incorporated under the name of the Augustin Fuller Company, with $50,000 capital.

The Sharon Coke Company are preparing plans for a modern coking plant to be erected at South Sharon to supply coke for the 600-ton blast furnace. It will consist of over 300 ovens and the daily capacity will be 1200 tons. The coal for the plant will be brought from the company's mines in Fayette County and the gas generated in the manufacture of coke will be used for fuel under the boilers in making steam. Two shafts will be sunk at the coal mines early the coming spring.

The Bradford Metal Stamping & Machine Company have been organized at Bradford, Pa., with a capital of $20,000, of which $15,000 is said to have been paid in. The concern are about completing a two-story building and expect to start business about February 1. They will manufacture galvanized finials, cornices, skylights, &c. O. W. Pierce of Olean, N. Y., is president and general manager.

At Pittsburgh, an affidavit of defense was filed last week in the suit for $50,000 damages brought by the Monongahela Land Company against Graff & Co., stove manufacturers in that city, whose business was taken over last year by the Pittsburgh Stove & Range Company. The plaintiffs owned property in Monongahela City, and to induce Graff & Co. to locate their works there, conveyed to the concern 5 acres of land, and agreed to give a bonus of $25,000. The purchasers of lots were to pay the money to a trustee, the latter to hold it as security for the defendant company for the payment of this bonus. It was for the alleged breach of this contract that damages were asked. The defendant company deny they entered into the contract in bad faith, and say they were not obliged to show the plaintiffs any plans of the proposed plant. It is said there was collected from the sale of lots about $17,000, of which the defendant company received but $6425, although they expended $19,000 in removing their plant. It is charged that the plaintiff expended $11,000 for other purposes. The defendant company claim the plaintiffs owe them interest on $7000 and $18,000, which was due when the contract was broken.

The Sharon Chemical Company have been organized at South Sharon, Pa., with a capital of $200,000. This is an identified interest of the Sharon Steel Company, and will supply acids for the annealing, tinning and galvanizing departments of all the plants owned by the Sharon Steel Company.

The Hocking Valley Railroad Company have placed contracts with the Barney & Smith Car Company of Dayton for 15,000 coal cars, the contract being in the neighborhood of $1,000,000. This and other large contracts recently secured will keep them busy until October, running full force.

The Pittsburgh Steel Shafting Company of Pittsburgh have leased quarters in Toledo, Ohio, for a large branch warehouse. O. S. Potter will be local manager.

The Ohio Galvanizing & Mfg. Company of Niles, Ohio, recently incorporated with $100,000 capital stock, have organized as follows: F. F. Bentley, president; W. H. Smiley, vice-president; A. J. Bentley, secretary-treasurer. Their new plant is nearly completed, and they expect to commence operations within a few days.

The Chicago-Cleveland Car Roofing Company of Cleveland have commenced work on their new plant on Lake street, between Coe and Marquette streets, that city. The building will be 325 x 100 feet, one story high. Watterson & Clague, Cleveland, are architects.

The Consumers' Can Company, Baltimore, Md., recently incorporated with $400,000 capital, have taken over the business formerly conducted by the Consumers' Can Company of Baltimore, and have leased a large property in that city that will more than treble the capacity at that point. They expect to locate in their new quarters at Central avenue and Fawn street in February, and will have a capacity to use about 150,000 to 200,000 boxes of tin plate per annum at each plant. They are also negotiating for a site in the vicinity of Chicago for the location of a new plant.

The Iron and Metal Trades.

Our monthly blast furnace report shows that we entered the new year with a capacity in operation among the Coke and Anthracite furnaces of 291,992 tons weekly. This is based on the tonnage produced in December and therefore may be exceeded if the plants get into good swing again. Stocks of Pig Iron show practically no change, which is due to the fact that while many furnaces reduced the amount on hand others accumulated Iron because they could not ship it as fast as wanted.

The Pig Iron market here continued active. The United States Steel Corporation have purchased 100,000 tons of Bessemer Pig from the Valley furnaces, and other interests also have been buyers. There has been considerable activity, too, in the Central West in Forge and Foundry Irons. In Eastern Pennsylvania round lots of Basic Pig have been purchased by different interests, aggregating about 15,000 tons. Basic Iron has also been bought for the second half of the year for delivery in the St. Louis district, the sales aggregating about 22,500 tons. Chicago, too, reports vigorous buying, and there Charcoal Pig has advanced further. We note the sale of a trial lot of 2000 tons of foreign Basic to go to Central Pennsylvania.

Pittsburgh reports the sale of 3000 tons of foreign Billets, for delivery at Youngstown, at $27.50, with further business pending. Quite a number of Eastern consumers are now using small quantities of foreign Steel, but in the aggregate the tonnage is not large. It is certainly an amazing change in a comparatively short time that we are now importing Steel, where we were heavily exporting in 1900.

In the Steel Rail trade the matter of principal interest is the closing of the order for 105,000 tons for the Mexican National Railroad. As we understand it, about 50,000 tons were taken by German makers, while American mill interests took about 50,000 tons. It is doubtful, however, whether the latter quantity will be rolled in this country, and it is more than likely that one-half of it will be assigned to English mills.

Reports from the Structural mills indicate a continued heavy movement. Chicago notes contracts for two buildings, involving 20,000 tons; Pittsburgh has one building calling for 8000 tons and in New York the Rapid Transit Power House, to be let this week, calls for 9000 tons. The railroads, too, are contracting heavily for bridge work. The Atchison, Topeka & Santa Fé road has placed contracts involving a tonnage of 5500 tons.

The American Bridge Company report a number of interesting export orders, including structures for Japan, New South Wales, Mexico and Cuba, and an eight-span bridge for Peru.

In those lines which are handled largely by the jobbing trade the observation is made that large orders are coming in from the large houses in anticipation of the spring demand.

In the Metal trades we have another lowering in the price of Copper and lower figures in Nickel and in Antimony.

A Comparison of Prices.

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type Declines in Italics.

	Jan. 15, 1902.	Jan. 8, 1902.	Dec. 18, 1901.	Jan. 16, 1901.
PIG IRON:				
Foundry Pig No. 2, Standard, Philadelphia	**$16.75**	$16.50	$15.75	$15.50
Foundry Pig, No. 2, Southern, Cincinnati	**14.75**	14.25	14.25	13.25
Foundry Pig, No. 2, Local, Chicago	**16.00**	15.50	15.50	14.75
Bessemer Pig, Pittsburgh	16.50	16.75	16.50	13.00
Gray Forge, Pittsburgh	16.25	16.00	15.00	13.15
Lake Superior Charcoal, Chicago	**19.50**	19.25	18.50	18.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	27.50	27.00	27.00	19.75
Steel Billets, Philadelphia	....	....	29.00	21.00
Steel Billets, Chicago	....	....	....	20.75
Wire Rods, Pittsburg	**33.50**	32.50	34.25	35.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	26.00
Spikes, Tidewater	2.00	2.00	2.00	1.50
Splice Bars, Tidewater	1.65	1.65	1.65	1.35
OLD MATERIAL:				
O. Steel Rails, Chicago	**14.75**	14.75	14.00	12.00
O. Steel Rails, Philadelphia	**18.25**	18.25	18.00	15.00
O. Iron Rails, Chicago	21.00	21.00	21.50	18.50
O. Iron Rails, Philadelphia	21.50	21.50	21.50	18.00
O. Car Wheels, Chicago	**16.00**	16.00	15.50	16.00
O. Car Wheels, Philadelphia	**17.00**	17.00	16.75	17.00
Heavy Steel Scrap, Chicago	13.50	13.50	13.50	12.00
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	....	1.65	1.65	1.45
Common Iron Bars, Chicago	1.65	1.65	1.65	1.45
Common Iron Bars, Youngstown	1.50	1.50	1.55	1.30
Steel Bars, Tidewater	....	1.70	1.70	1.40
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.25
Tank Plates, Tidewater	1.78	1.78	1.75	1.55
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.40
Beams, Tidewater	1.75	1.75	1.75	1.65
Beams, Pittsburgh	1.60	1.60	1.60	1.50
Angles, Tidewater	1.75	1.75	1.75	1.55
Angles, Pittsburgh	1.60	1.60	1.60	1.40
Skelp, Grooved Iron, Pittsburgh	*1.70*	1.70	1.72½	1.50
Skelp, Sheared Iron, Pittsburgh	*1.75*	1.75	1.80	1.55
Sheets, No. 27, Pittsburgh	2.90	2.90	2.90	2.85
Barb Wire, f.o.b. Pittsburgh	2.90	2.90	2.90	2.80
Wire Nails, f.o.b. Pittsburgh	**2.00**	2.00	1.95	2.20
Cut Nails, Mill	2.05	2.05	2.05	1.95
METALS:				
Copper, New York	*11.00*	11.75	13.87½	16.87½
Spelter, St. Louis	4.12½	4.12½	4.12½	3.92½
Lead, New York	4.00	4.00	4.00	4.37½
Lead, St. Louis	*3.90*	3.90	3.95	4.17½
Tin, New York	*23.75*	22.50	24.50	26.50
Antimony, Hallett, New York	*8.00*	8.25	8.25	9.25
Nickel, New York	*50.00*	60.00	60.00	55.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	4.19	4.19	4.19	4.19

Chicago.

FISHER BUILDING, January 15, 1902.—(*By Telegraph.*)

The excellent condition of business indicates that buyers of Iron and Steel, who have been going over their books and sizing up the situation, are impressed by the very favorable outlook. They are in some cases placing quite large orders, but usually the quantities purchased are moderate in size, the total of such small transactions footing up a heavy tonnage. The indications are strongly in favor of an advance in prices on some finished products. The scarcity of Steel continues. The influence of the largest manufacturers is being exerted in keeping prices down, but the volume of business is so large and buyers are in so many instances offering premiums for better deliveries that it is becoming increasingly difficult to keep values from advancing.

Pig Iron.—Vigorous buying is in progress. Heavy sales have been made for delivery during the last half of the year. Local furnace companies have booked large contracts for these deliveries at advanced prices. This seems to indicate that consumers of Iron are feeling confident that values will not shrink to any extent this year. More large business is under negotiation. A very heavy demand is noted for spot Iron and for early delivery. Spot Iron readily brings $1 more than

regular quotations on Foundry grades. The Southern furnace companies are taking a great deal of this business. The Coke situation has not yet grown much better and the output of local Iron is still greatly restricted. This causes a particularly strong demand from the Malleable trade, now in straits because of the limited supply coming from the furnace companies with whom they have contracts. Sales of Ohio Coke Malleable Bessemer have been made at $19 for quick delivery, and Lake Superior Charcoal has sold up to $20, and perhaps even higher, in 1000-ton lots. The Excelsior Charcoal Furnace, at Ishpeming, Mich., will be blown in this week and will add to the available supply of Charcoal Iron. We quote as follows:

Lake Superior Charcoal	$19.50 to $20.25
Local Coke Foundry, No. 1	16.50 to 17.00
Local Coke Foundry, No. 2	16.00 to 16.50
Local Coke Foundry, No. 3	15.50 to 16.00
Local Scotch, No. 1	16.50 to 17.00
Ohio Strong Softeners, No. 1	17.60 to 17.85
Southern Silvery, according to Silicon	16.90 to 17.15
Southern Coke, No. 1	16.40 to 16.65
Southern Coke, No. 2	15.65 to 15.90
Southern Coke, No. 3	15.15 to 15.40
Southern Coke, No. 1 Soft	16.40 to 16.65
Southern Coke, No. 2 Soft	15.65 to 15.90
Foundry Forge	14.65 to 14.90
Southern Gray Forge	14.65 to 14.90
Southern Mottled	14.15 to 14.65
Southern Charcoal Softeners, according to Silicon	15.50 to 16.50
Tennessee Silicon Pig	16.40 to 16.65
Alabama and Georgia Car Wheel	20.65 to 21.65
Malleable Bessemer	17.00 to 17.50
Standard Bessemer	.... to 17.50
Jackson County and Kentucky Silvery, 8 per cent. Silicon	17.60 to 17.85

Bars.—Manufacturers report a great rush of business in moderate quantities. All classes of consumers seem to have found it necessary to purchase more freely. Large buyers are placing orders for lots of 1000 and 2000 tons, and occasionally for a greater quantity. Some of the independent Iron mills are so full of work that they are passing considerable business of which delivery is wanted during the next three months. The possibility of an advance is still strongly intimated. Small Angles are particularly hard to get, and on these a premium is frequently offered by urgent buyers. Mill shipments are held at 1.65c. to 1.80c., Chicago, for Bar Iron or Soft Steel, and 2.05c. to 2.20c., base, for Hoops. The demand for small lots to be shipped from jobbers' stocks is fully as great as during the preceding weeks and standard sizes are constantly in short supply. Small lots are quoted at 1.90c. to 2c. for Bars and 2.40c. to 2.50c., base, for Hoops.

Structural Material.—The contracts have been placed for the erection of the huge First National Bank Building, which is now estimated to take 14,000 tons, and the Otto Young Building, to take 6000 tons. Other large building projects are rapidly getting into shape for bids. A strong demand is reported from the general consuming trade, particularly from manufacturers of Car Bolsters and other railway supplies. The local yards are enjoying a continued heavy business because of the sold up condition of the mills. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 1.75c. to 1.85c.; small lots of Beams and Channels from local yards are quoted at 2.25c.; Angles, 2c. rates; Tees, 2.05c.

Plates.—The demand is improving daily. It is not yet unusually active, although the character of the trade is reported remarkably good for the season. It has steadily grown since the opening of the year. The local consumption of Plates has been greatly increased by the resumption of operations by the Pressed Steel Works at Joliet. Store trade is fair. The extra on heads or circles has been advanced from 1-10c. to 3-10c. Mill shipments are quoted as follows: Tank Plate, ¼-inch and heavier, 1.75c. to 1.80c., Chicago; Flange, 1.85c. to 1.95c.; Marine, 1.95c. to 2.05c. Jobbers are selling small lots from store at 1.90c. to 2c. for Tank and 2.25c. for Flange, with the usual extras for heads, segments, lighter gauges, &c.

Sheets.—Black Sheets are not yet in oversupply. The standard mills are apparently well filled with work and the small independent mills seem to be less anxious for business, notwithstanding the fact that this is the dull season with many branches of the Sheet consuming trade. Mill shipments of No. 27 Black Sheets are regularly quoted at 3.15c. to 3.30c., Chicago, but in some cases a concession has been made on certain sizes. Jobbers report a fair demand from store. Small lots of No. 27 Black Sheets are quoted at 3.40c. to 3.50c. and Galvanized at 70 to 70 and 5.

Merchant Pipe.—Reports indicate a fairly active trade, of which the independent manufacturers are securing a good share. This business is being taken at somewhat lower prices than those named by the leading manufacturers. The market, however, is being well maintained under the circumstances and carload quotations have not yet been changed. Carload lots are now quoted as follows, random lengths: Black, ⅛ to ½ inch, 60 off; ¾ to 10 inches, 67 off; Galvanized, ⅛ to ½ inch, 47 off; ¾ to 6 inches, 55 off.

Boiler Tubes.—The market is firmer, the mills being better supplied with orders. The demand from local stocks has recently been excellent. Quotations are as follows:

	Steel.	Iron.
2¾ to 5 inches	57½	47½
1¾ to 2½ inches	50	40
1 to 1½ inches	35	30
6 inches and larger	52½	45

Merchant Steel.—Some new business is coming up and contracts are being taken for delivery beginning in April. Prices are firm on Open Hearth Steel, but Crucible Tool Steel has been the object of greater competition and prices are somewhat lower. Mill shipments, Chicago, are quoted as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.85c. to 2c.; Open Hearth Spring Steel, 2.30c. to 2.40c.; Toe Calk, 2.40c. to 2.60c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 55 to 60 off in carload lots. Ordinary grades of Crucible Tool Steel are quoted at 6c. for mill shipments; specials, 12c. upward.

Rails and Track Supplies.—Inquiries are constantly being received for Heavy Sections of Steel Rails, but not much business is now being entered, as the mills are unable to make the deliveries. A good trade is doing in Light Rails, for which the demand is running in excess of the output. Heavy Sections are quoted at $28 and Light Sections at $31 to $35. Fastenings are quoted as follows: Splice Bars, 1.70c. to 1.80c.; Spikes, 2c. to 2.10c.; Track Bolts, with Hexagon Nuts, 2.90c. to 2.95c.; Square Nuts, 2.75c. to 2.80c.

Steel Billets.—While Open Hearth Billets are still quoted at $33 to $35, Chicago, it is becoming increasingly difficult to secure even small lots.

Old Material.—The market is showing the effect of good business in new products, which is compelling consumers to cover their needs for raw material. Although strong efforts have been made by the mills to keep Scrap prices down, yet the demand seems to be sufficient to enable dealers to get slightly higher prices. Foundrymen are free buyers of Cast Scrap. The following are approximate quotations per gross ton:

Old Iron Rails	$21.00 to $22.00
Old Steel Rails, mixed lengths	14.75 to 15.00
Old Steel Rails, long lengths	20.50 to 21.00
Heavy Relaying Rails	25.50 to 26.50
Old Car Wheels	16.00 to 16.50
Heavy Melting Steel Scrap	13.50 to 14.00
Mixed Steel	10.50 to 11.00

The following quotations are per net ton:

Iron Fish Plates	$16.00 to $17.00
Iron Car Axles	20.00 to 21.00
Steel Car Axles	18.00 to 18.50
No. 1 Railroad Wrought	15.50 to 16.00
No. 2 Railroad Wrought	13.75 to 14.00
Shafting	16.00 to 16.50
No. 1 Dealers' Forge	12.50 to 13.00
No. 1 Busheling and Wrought Pipe	11.00 to 11.50
Iron Axle Turnings	12.00 to 12.25
Soft Steel Axle Turnings	10.50 to 11.00
Machine Shop Turnings	10.00 to 10.50
Cast Borings	.... to 5.50
Mixed Borings, &c	.... to 5.50
No. 1 Boilers, cut	11.00 to 11.50
No. 2 Boilers, cut	10.00 to 10.50
Heavy Cast Scrap	11.50 to 12.00
Stove Plate and Light Cast Scrap	9.00 to 9.25
Railroad Malleable	12.50 to 13.00
Agricultural Malleable	11.50 to 12.00

Metals.—The Copper market has been completely demoralized by the further drop during the week and transactions are limited. Carload lots of Lake are quoted at 11½c. and Casting brands at 11¼c. Pig Lead is

steady at 3.95c. for Desilverized and 4.05c. for Corroding in 50-ton lots, with a good volume of business. Almost nothing is doing in Old Copper and Brass, the best prices which consumers would pay being about 10c. for Heavy Cut Copper and 9c. for Copper Bottoms. Small lots of Pipe Lead are quoted at 3.80c. and Zinc at 3c.

Coke.—The supply of Foundry Coke fluctuates considerably. It grows better for a day or two, and then another period of scarcity follows. Spot Coke of any character readily brings $5.75 to $6. Connellsville 72-hour Foundry Coke is quoted for future delivery at $5 to $5.25.

Philadelphia.

FORREST BUILDING, January 14, 1902.

The Iron and Steel markets still remain in a condition of doubt and uncertainty. Pig Iron is working its way toward higher figures, and there is an impression in the trade that it will probably go a little beyond today's quotations before there is any distinct reaction. Finished Material is manifesting some irregularity, and while prospects are certainly not unfavorable, it is equally true that in some lines the demand is not as active as it was during the greater portion of the past six months. A good deal will depend, however, upon the course of events during the next month or six weeks. The feeling would be more confident if it were not for the steady development of new plants and the increased facilities for production which are being made at many of the old concerns, all of which necessitates a corresponding increase in consumption if the *status quo* is to be maintained. Judging from the amount of work given out by the railways it may be supposed that a full year's business is practically assured, but the trade know by experience that if anything untoward occurs a great many of the orders are liable to be hung up indefinitely, so that while the outlook is excellent the possibility of unfavorable developments ought not to be ignored. The wave of prosperity has been so long continued, and of such extraordinary proportions, that people are apt to be skeptical in regard to its being maintained very much longer, but there are some features which tend to uniformity and permanency in prices which have never existed until the last year or two, and whatever the final outcome will be, these new methods have certainly been of inestimable value, especially during the past eight or ten months. Price agreements have never been lived up to as they have been since their inception during the early portion of the past year, but it may be said that the inducements were never as great either. Penalties for infractions and compensation for shortages have worked wonders in steadying the markets, and as the parties in interest begin to realize their beneficial influences the closer will be their adherence to regulations which are injurious to none and helpful to all. It is believed, therefore, that even if the volume of business is not as large as may be necessary to keep the mills fully employed, matters will be so regulated and controlled that there will be no demoralization in prices. It is too early yet to come to any definite conclusions in regard to the volume of business, but as already stated prospects are favorable, and the control of prices so strongly intrenched that the volume, whether larger or smaller, will not be permitted to interfere with a safe and proper adjustment of values.

Pig Iron.—It is a difficult matter to give anything like close quotations in a market like the one we are now having. The lowest price within a day or two for No. 2 X Foundry was $16.50, Philadelphia, and the highest is said to have been very close to $18 for two lots, both for several hundred tons each, and quality in both cases being usually regarded as about equal. No particular reason can be given for the discrepancy except that the seller (and at least one of the buyers) must have considered the Iron worth the money, while in the other case their ideas of the market were evidently somewhat less buoyant. These cases are a fair illustration of the difficulty in giving close quotations, although it is probable that from $16.75 to $17.25 would be a full average at this writing. Prices may go a little higher, some think that $18 will be reached within 30 days, but more are of the opinion that prices are high enough, and with a return to normal conditions in the matter of Coke and railway facilities, prices should begin to ease off a little. At the moment, however, there is an undoubted scarcity of Iron, and as the West is taking most of the Virginia and Central Pennsylvania furnace products, consumers hereabouts have to draw their supplies almost exclusively from local furnaces. The situation is, therefore, extremely sensitive, and it would not require much to give a slight turn to the market, either for advance or decline. The chances are pretty evenly balanced, and until the usual monthly furnace report in regard to stocks and production is given, it is hard to say which side of the market will be the first to come under its influence. The Coke situation is improving, and cars are less difficult to secure, but there is still a great scarcity of motive power, but all the indications at the present time seem to favor easier conditions in the near future. Sales of Basic Iron have been made at from $15.75 to $16, delivered in consumers' yards, and Bessemer has been bought for shipment to Atlantic ports, but prices of the latter have not been made public as yet. Quotations cover a very wide range, but for Philadelphia and nearby deliveries the following are as near as can be ascertained: No. 1 X Foundry, $18 to $18.25; No. 2 X Foundry, $16.75 to $17.25; No. 2 Plain, $16.25 to $16.50; Standard Gray Forge, $15.75 to $16; Ordinary Gray Forge, $15.50; Basic (Chilled), about $15.75 to $16, and Besemer, $17 to $17.50.

Billets.—There is some inquiry and offers to sell are out at $30 for prompt shipment, but it is not expected that much business will be done at that figure. It may be said, however, that counter offers are asked for.

Plates.—There are no new features in this department, and nothing in sight likely to cause any change for some time to come. Mills are comfortably full of work, and there is a reasonably good prospect for its continuance, but with increasing capacity for production it requires an immense demand to keep everything moving. Prices for Philadelphia and nearby deliveries are as follows: Universals, 1.75c. to 1.80c.; Sheared, 1.75c. to 1.80c.; Flange, 1.85c. to 1.95c.; Fire Box, 1.95c. to 2.05c.; Marine, 1.95c. to 2.05c.; C. H. No. 1 Iron, 240c.; C. H. No. 2 Flange, 2.90c.; C. H. No. 1 Flange Fire Box, 3.40c.

Structural Material.—Mills are still far in arrears with deliveries, and it is extremely difficult to place any order unless subject to delay. Premiums are paid to secure small lots promptly, but there is no doubt that the productive capacity is quite inadequate for the current consumption requirements. Nominal quotations are as follows for seaboard or nearby deliveries: Angles, 1.75c. to 1.85c.; Beams and Channels, 15-inch and upward, 1.75c. to 1.85c.

Bars.—Complaints of dullness are not infrequent, and some of the Iron mills are undoubtedly running short of work. This is attributed in part to the lower prices at which Steel Bars are offered and which in consequence are absorbing a good deal of business which would otherwise belong to the Iron mills. Prices are steady, however, at the pool figures, and are not likely to be changed unless something very unexpected occurs. Iron Bars, 1.67c. to 1.72c., delivered; Steel at 1.62c. to 1.67c.

Sheets.—Demand less active, but mills have a good deal of work on hand, and beyond that are so cleaned out of stock that it is regarded as a good opportunity to get something ahead to meet daily requirements. Prices about as follows for deliveries during January and February in carload lots: No. 10, 2.40c. to 2.50c.; No. 14, 2.60c.; Nos. 16 and 17, 3c.; Nos. 18-21, 3.10c.; Nos. 26, 27, 3.30c. to 3.40c.; No. 28, 3.50c.

Old Material.—Good demand and with light offerings holders have been able to realize full prices. Sales at figures named herewith and bids and offers at this date as follows: for deliveries in buyers' yards: Low Phosphorous Scrap, $24 to $24.50; Choice Railroad Scrap, $20 to $21; Country Scrap, $16 to $17; No. 2 Light (Ordinary), $12.50 to $12.75; No. 2 Light (Forge), $14.75 to $15.25; Machinery Cast, $14.50 to $15; Heavy Steel,

$18.25 to $18.50; Old Steel Rails, short lengths, $18.25 to $18.50; Old Iron Rails, $21.50 to $22; Wrought Turnings, $13 to $13.50; Cast Borings, $8 to $8.25; Old Car Wheels, $17 to $17.25; Iron Axles, $24 to $25; Steel Axles, $19 to $20.

Cleveland.

CLEVELAND, OHIO, January 14, 1902.

Iron Ore.—A meeting of Ore men was held in Cleveland on last Thursday and the matter of prices for the year was informally discussed. This was one of the last preliminary meetings before the regular meeting of the Ore Association, which will take definite action. So far very little of a definite nature has been done. The growing scarcity of raw material is a noticeable thing with the Ore producers, who are more and more unwilling, this being the case, to part with their product without receiving some better compensation for it. Acting upon the fact that many of the Ores, other than Bessemer Old Range, have been sold at absolute cost, or so near to it that there ns no profit, the Ore men have determined that it is time to come to an agreement on the price of non-Bessemer Old Range Ores and Bessemer and non-Bessemer Mesaba Ores. A committee was appointed to arrange a new schedule of prices that will be on a little higher scale than that received during the last year. As soon as the committee has completed its task the new Ore Association will meet and put the schedule into effect. It is ascertained, however, that unless such a movement is generally concurred in the plan may be abandoned. The matter of season rates for the transportation of Ore has not been settled, although generally discussed. It is now believed that a compromise between that which the skippers are willing to pay and what the owners are willing to accept will be agreed upon, which will bring the rate to 90c. a gross ton between Duluth and Ohio ports, with the other rates scaled on that one. No action is expected until after the meeting of the Ore Association, which will be in a fortnight.

Pig Iron.—The Pig Iron producers in the Valleys are reporting that the supply of Coke is very slightly increased in the last week, and that the situation has been relieved to a very limited extent. It has been possible, however, for some of the furnaces which have been out of blast to resume operations during the week, and the production of Pig Iron by this means has been materially increased. As to deliveries, however, the relief is hardly appreciable, because the cars have not increased in number applicable to the shipment of the material from the furnace piles to those of the consumers. There is still a very serious stringency in this respect and the movement away from the furnaces is very slow. Foundry Iron is therefore very scarce both because of the poor movement and because the sales have so greatly exceeded production that the furnacemen are not making any promises as to when they will be able to deliver the material already sold. The prices hold at $16.50 for No. 1 and $16 for No. 2 in the Valleys. Bessemer Iron is about sold up for the first quarter, and some sales have been made into the second quarter. All Iron disposed of for shipment during this quarter has been placed on the basis of $16 in the Valley, but the producers have yielded to the general demand for conservative action in regard to the price of Pig Iron and have receded to $15.75 in the Valley as the price at which the product is to be sold during the second quarter. This quotation is now universally made upon this market. As to Basic Iron, the selling has been very light of late and the market is a little uncertain. There are those who are demanding a further advance in the price, while some producers are holding down pretty well, adhering to $15.75 as the safest basis. It is likely that these prices will prevail, especially as all sales recently made have been upon that basis.

Finished Material.—An effort has been made during the week to increase the price of Bars, but nothing has come of it so far, and as the larger organizations in the pool are opposed to the change it will likely not be made. Two things are said to have led up to the reports of the change and to the effort to force one. During the week the sales of Bars have been enormous. This is the dull season in that trade, and it is expected that before the spring has advanced very far the demand will be without precedent. The eagerness of the jobbers and others to supply their future needs has created a very strong market, which naturally started some talk of better prices. Aside from this some of the smaller concerns have not been able to obtain their proportion of the business, and have assisted the report of better prices in sight in order that some of the more backward buyers might come to the front and cover possible needs. The quotations continue to be 1.50c., Pittsburgh, for Bar Iron; 1.50c., Pittsburgh, for Bessemer Steel Bars, and 1.60c., Pittsburgh, for Open Hearth Steel Bars. The demand for Sheets has kept up this week, but the biggest activity has been among the jobbers, who are laying by in store against a big spring demand. The warehouses are full now, and the chances for deliveries are better than they have been, except upon some of the intermediate gauges, which are scarce. The quotations continue to be on a basis of from 3.35c. to 3.50c. for No. 27 gauge one pass cold rolled, full cold rolled being 10c. extra. The demand for Structural Material is also good, and the sales during the week have aggregated a good tonnage in small lots. The quotation continues at 1.70c. for Beams, Channels and Angles. In Plates the ordering this week has shown the same activity which characterized the market for the last few weeks—namely, an increase in the demand showing a better business ahead. Universal Plates are very scarce since the recent ordering has been so heavy, but Sheared Plates are running lighter in the orders, although the outlook is now better than it has been. The price holds at 1.70c. Rails are being ordered in small lots only now by railroads which are looking for some cleaning up lots. It is expected that a complication in the financial affairs of electric lines in this section may result in the diminishing of the amount of Rail laid this year as against the expectations. This will reduce the Rail tonnage considerably. The price holds at $28.

Old Material.—The buying of Scrap has kept up this week, and the general business is in good condition. The prices have not changed materially and are as follows: No. 1 Wrought, $16 net; Cast Borings, $8 gross; Wrought Turnings, $12.25 gross; Cast Scrap, $13 net; Stove Plate, $10 net; Heavy Steel, $17 gross; Old Iron Rails, $22 gross; Steel Rails, $17 gross; Old Iron Axles, $22 net; Old Car Wheels, $17 gross.

Cincinnati.

FIFTH AND MAIN STS., January 15, 1902.—(*By Telegraph.*)

The situation has not changed materially within the past week, and there is nothing in the outlook from which to forecast an immediate departure from the present state of affairs. There have been quite a number of buyers in the market for Standard grades of Pig Iron for delivery within the next four months, but they have been unable to find what is wanted. The selling for more extended deliveries has been nothing big, but nevertheless in a quiet way a very considerable tonnage has changed hands. Prices have stiffened up, and all Southern interests are practically in harmony on the question of values again. It is believed that the car service is showing the first symptoms of improvement, and, take it all around, the situation is a strong one. Freight rate from the Hanging Rock district is $1.10 and from Birmingham $2.75. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	....	to	$15.25
Southern Coke, No. 2	....	to	14.75
Southern Coke, No. 3	....	to	14.25
Southern Coke, No. 4	....	to	13.75
Southern Coke, No. 1 Soft	....	to	15.25
Southern Coke, No. 2 Soft	....	to	14.75
Southern Coke, Gray Forge	....	to	13.75
Southern Coke, Mottled	....	to	13.75
Ohio Silvery, No. 1	$16.25	to	16.75
Ohio Silvery, No. 2	15.75	to	16.25
Lake Superior Coke, No. 1	....	to	17.10
Lake Superior Coke, No. 2	....	to	16.60
Lake Superior Coke, No. 3	....	to	16.10
Southern Basic	....	to	14.75
Car Wheel and Malleable Irons.			
Standard Southern Car Wheel, chilling grades	$18.75	to	$19.25
Standard Southern Car Wheel, No. 2	17.75	to	18.25
Lake Superior Car Wheel and Malleable	18.50	to	19.00

Plates and Bars.—The market is strong, and very active, especially on Bars and Angles. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.65c. to 1.70c., with half extras; same in small lots, 1.80c. to 1.90c., with full extras; Steel Bars, same price as Iron Bars, base, Angles, in carload lots, 2c.; Plates, ¼ inch and heavier, 1.90c. to 2c.; 3-16 inch, 2.10c.; Sheets, No. 16, 2.90c. to 3c.

Old Material.—The market is unchanged. Business continues fair. We quote dealers' buying prices, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, per net ton, $15.25 to $15.50; Cast Railroad and Machine Scrap, $12.25 to $12.75; Iron Axles, $20.50 to $21; Iron Rails, $19.50 to $20; Steel Rails, rolling mill lengths, $15.75 to $16; short lengths, $13.75 to $14; Car Wheels, $16 to $17. All prices except No. 1 Wrought on the basis of gross tons.

Pittsburgh.

HAMILTON BUILDING, January 15, 1902.—(*By Telegraph.*)

Pig Iron.—The purchase of 100,000 tons of Standard Bessemer Pig Iron by the United States Steel Corporation from the Bessemer Furnace Association, at $15.75 at the furnace, for delivery in April, May and June; 6000 tons by another Steel interest at the same price, together with heavy sales of Forge and Foundry Iron, have put the Pig Iron market on such a firm basis as insures beyond doubt the continuance of present conditions through first half of this year at least. All the Iron the furnaces can make in the first three months is under contract, and also a large part of the output for the second half. This probably means that the furnaces will charge higher prices for small lots of Iron for prompt delivery. In fact, Bessemer has already sold at $16 at furnace in fair sized lots. Standard Gray Forge is very strong at $16.25 to $16.50, and some good sized lots have been sold at the higher price. Sales of Northern brands of No. 2 Foundry Iron, for delivery in the second half, have been made on the basis of $16.50, Pittsburgh. For prompt delivery $16.75 to $17 has been done. We quote Standard Bessemer Pig Iron at $15.75 to $16 at furnace, or $16.50 to $16.75, Pittsburgh. Standard Gray Forge is $16.25 to $16.50; No. 2 Foundry, $16.50 to $17; No. 1, $17 to $17.50, all f.o.b. Pittsburgh, prices depending largely on deliveries wanted.

Steel.—An item of interest in the Steel trade is the fact that 3000 tons of German Basic Billets have recently been imported by a consumer and laid down at $27.50 in the Youngstown district. Negotiations are under way for quite a tonnage of Billets and Sheet Bars for importation from Germany. We quote small lots of domestic Billets for spot shipment at $27.50 to $28, maker's mill. There is very little doing, however, consumers being covered by contracts at lower prices.

Iron and Steel Scrap.—We note a sale of about 7000 tons of Skelp Ends, deliveries running all through this year. Part of this material brought $5 and the rest $7 a ton higher than last year's prices. The Scrap trade is strong, and heavy melting stock is in active demand and has sold up to $18 gross ton.

Spelter.—We quote prime Western brands at 4.15c., Pittsburgh.

(*By Mail.*)

The week has been marked by heavy purchases of Bessemer Pig Iron for second quarter. The United States Steel Corporation have bought 100,000 tons for April, May and June at $15.75, Valley; another Steel interest have taken 6000 tons for same delivery and at same price, and there have been smaller sales for nearby delivery at $16, Valley. There have also been good sized sales of Forge Iron at $16.25 to $16.50, Pittsburgh. The whole Pig Iron market is as strong as it possibly could be, and it is certain present conditions in the Iron trade are assured for first half. There is a good demand for nearly all kinds of Finished Iron and Steel, and the tone of the market is firm.

An event of importance is the importation of a round lot of German Basic Billets at $27.50, delivered Youngstown, Ohio. The Rod market is a good deal stronger and sales have been made at $33.50 and higher, maker's mill.

Ferromanganese.—The local maker continues to quote 80 per cent. domestic Ferro at $52.50, delivered. We quote foreign at $50, delivered, in large lots.

Muck Bar.—We note a sale of 1500 tons at a price equal to about $29.25, delivered at buyer's mill. We quote standard makes of Muck Bar at $29.25 to $29.50, delivered.

Cotton Ties.—Prices on Cotton Ties for delivery this season are as follows: 80c. per bundle in 10,000-bundle lots and over, 83c. for less than 10,000 and more than 2000 bundles, 86c. for 2000 bundles and less. These prices are f.o.b. mill, Pittsburgh; full freights added to price at points of delivery. These prices are for delivery prior to April 1, 1902, and ½c. per bundle extra per month will be charged for deferred deliveries.

Rods.—The Rod market is a good deal stronger and sales of ordinary Bessemer Rods have been made at $33.50, maker's mill, while for prompt delivery higher prices are said to have been paid. We quote ordinary Bessemer Rods at $33.50 to $34, maker's mill. We note a sale of 2000 tons at the first named price.

Iron and Steel Bars.—Some heavy orders for both Iron and Steel Bars have been placed within the past week and the market is very firm. Some of the mills rolling Iron Bars, and that are well sold up, are quoting 1.60c., Pittsburgh. We quote Iron and Steel Bars at 1.50c., at mill, in carloads and larger lots. For Open Hearth Steel $2 a ton extra is charged. Steel Bars in small lots, as follows: Under 2000 pounds to 1000 pounds, 5c. advance; under 1000 and more than 500 pounds, 15c.; less than 500 pounds, 25c. advance. Steel Hoops are 1.90c., base, in carloads, and 1.95c. in less than carloads, f.o.b. mill.

Structural Material.—A large number of new buildings is contemplated and a very heavy tonnage is in sight. The outlook is that the Structural mills will be pushed to full capacity all this year to get out tonnage as fast as needed. Active work has started on the Farmers' Deposit Bank Building, and the material, about 8000 tons or more, will be furnished by a local mill. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inches, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.50c., half extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh. Small lots of Shapes for prompt shipment bring from $3 to $5 a ton, or more, higher prices than the above.

Sheets.—We note a good volume of tonnage in both Black and Galvanized Sheets and the tone of the market is strong. However, it is not likely prices will be any higher, as so many independent mills have come in the market recently and are actively seeking business. We quote No. 28 Black Sheets, box annealed, one pass through cold rolls, at 3c. to 3.10c., and No. 27, 2.90c. to 3c. minimum in large lots. For small lots jobbers get from 10c. to 15c. advance over these prices. Galvanized Sheets are held at 70 and 10 off in large lots for extended delivery, and 70 and 5 off for carloads and 70 off in small lots.

Skelp.—The market is quiet. We quote nominally as follows: Grooved Iron Skelp, 1.70c. to 1.75c.; Sheared, 1.75c. to 1.80c.; Grooved Steel Skelp, 1.75c. to 1.80c., and Sheared, 1.80c. to 1.85c.

Merchant Steel.—We note a good demand for Plow and other Steels that are in season. The mills are full of work and the market is firm. We quote: Tire Steel, 1.70c. to 1.75c.; Toe Calk, 1.90c. to 2c.; Hammered Lay Steel, 3.75c. to 4c.; Open Hearth Spring, best quality, 2.50c. to 2.60c.; ordinary Sleigh Shoe, 2c. to 2.25c.; Sleigh Shoes, tapered and bent, 2.75c. to 3c.; Tool Steel, 6½c. and upward. On Tool Steel freight is allowed to points east of the Mississippi River.

Merchant Pipe.—Some comparatively low prices on certain sizes of Merchant Pipe are being made by some of the outside mills. It is evident, however, that some of the independent mills are making promises on deliveries of Pipe which they will not be able to fill. Con-

cessions in prices continue to be made and the tone of the market on Merchant Pipe is not as strong as it has been. The leading interest has not as yet made any change in discounts. Prices for small lots of Pipe to consumers are as follows:

Merchant Pipe.	Black. Per cent.	Galvd. Per cent.
⅛ to ½ inch and 11 to 12 inch	61	48
¾ to 10 inch	68½	56

Casing, Random Lengths.	S. & S.	I. J.
2 to 3 inch	58	53½
3¼ to 4 inch	63	59
4½ to 12½ inch	65	61½

Casing, Cut Lengths.	S. & S.	I. J.
2 to 3 inch	53½	59
3¼ to 4 inch	59	55
4½ to 12½ inch	61½	57½

Discounts to jobbers are lower than the above, depending on the tonnage.

Boiler Tubes.—We note a continued heavy demand, and the market is very firm. Prices to consumers in small lots are as follows:

Boiler Tubes.	Up to 22 feet. Per cent.
Steel.	
1 inch to 1¾ inch and 2¾ inch to 5 inch, inclusive	65½
2 inch to 2½ inch, inclusive	60
6 inch and larger	59
Iron.	
1 inch to 1½ inch and 2½ inch	43½
1¾ to 2¼ inch	43
2¾ to 13 inch	53

Iron and Steel Scrap.—Some heavy contracts for Scrap, including one for about 10,000 tons of Skelp Ends, are expected to be placed within a day or two. There is an active demand for Heavy Melting Stock for Bessemer and Basic practice. We quote No. 1 Wrought Scrap at $16.50 to $17 net ton; Busheling Scrap, $12.50 to $13 gross ton; Heavy Melting Stock, for which there is a very active demand, $17.50 to $18 gross ton; Old Iron Rails, $22 to $23 gross ton.

Plates.—The Plate Association met last week and reaffirmed base prices on Plates and also extras, with the exception of circles and boiler heads, on which 0.2c. per lb. extra is charged now instead of 0.1c. as heretofore. Some equalizations in delivered prices to a few points were also made. Reports of manufacturers who attended this meeting showed that the Plate situation was very much improved. Demand is better, and most of the big Plate mills are pretty well filled up for the next 60 days. Association prices are being rigidly held. We quote: Tank Plate, ¼ inch thick and thicker, up to 100 inches in width, 1.60c. at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price to 3. Plate more than 100 inches wide, 5c. extra per 100 lbs. Plate 3-16 inch in thickness, $2 extra; gauges Nos. 7 and 8, $3 extra; No. 9, $5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms, net cash in 30 days.

Seamless Tubes.—On account of heavy demand and also because of scarcity of Steel and high prices for it, the Shelby Steel Tube Company Department of National Tube Company have made an advance of 10 per cent. in prices of Seamless Tubes, effective from January 11. All the works of the Shelby Steel Tube Company are being operated to their utmost capacity to get out Tubes as fast as wanted.

Connellsville Coke.—The car supply in the region is very much better and shipments show a heavy increase. Output of Coke last week was 208,260 tons, according to the figures of the *Courier*, a gain over the previous week of 38,019 tons. Shipments were 9940 cars. High prices continue to be paid for Coke for spot shipment. Strictly Connellsville Furnace Coke on contracts for delivery through this year is held at $2.25 a ton, minimum. Up to $3.50 a ton has been paid for spot shipment. Seventy-two-hour Connellsville Foundry Coke is held at $2.75 to $3 a ton on contracts, and for spot shipment has sold at much higher prices. Main Line Furnace Coke is $2 to $2.10 on contracts, and Foundry is $2.25 to $2.50 a ton, depending on brand. There is a demand for all the Coke that is being made in the Connellsville region and outside of it as well.

St. Louis.

CHEMICAL BUILDING, January 15, 1902.—(*By Telegraph.*)

Pig Iron.—The factors ruling the Pig Iron market at the present time are generous inquiries and orders. The volume of transactions since our last report has exceeded those of the preceding week. Beyond a doubt all Iron that is being taken is for actual requirements, and this present condition of affairs stamps the market as being in a very healthy condition. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry	$15.75 to $16.00
Southern, No. 2 Foundry	15.25 to 15.50
Southern, No. 3 Foundry	14.75 to 15.00
Southern, No. 4 Foundry	14.25 to 14.50
No. 1 Soft	15.75 to 16.00
No. 2 Soft	15.25 to 15.50
Gray Forge	14.25 to 14.50

Bars.—No slackening in the demand and inquiry in the market for Iron and Steel Bars is evident and no price changes are to be noted. Jobbers generally report a very large trade and some say it is of exceptional proportions. We quote from mill: Iron Bars at 1.70c. to 1.80c.; Steel Bars at 2c. Jobbers quote Iron Bars at 2c.; Steel Bars at 2.10c., full extras.

Rails and Track Supplies.—In the market for Rails nothing new of note can be reported. The volume of demand and inquiry is exceptionally heavy. The Track Supplies are in demand and a heavy volume of business is being executed in this department of the market. We quote: Splice Bars, 1.75c. to 1.95c.; Bolts, with Square Nuts, 2.75c. to 2.90c.; with Hexagon Nuts, 2.90c. to 2.95c.; Spikes, 2c. to 2½c.

Angles and Channels.—The demand and inquiry in the market for Small Angles and Channels is heavy and generally satisfactory conditions prevail. Jobbers quote at 2.30c., base, for materials of this class.

Sheets.—Activity rules in the market for Sheets and the tone is very strong and firm. Jobbers quote Stove Pipe size, No. 27, 3.45c. to 3.50c.; Galvanized Sheets, 65 and 10 off, and in round lots 70 to 70 and 5 off.

Pig Lead.—Some business is being done in the Pig Lead market, but the volume is not considered heavy. Missouri brands are quoted on the basis of 3.90c. to 3.92½c., and Desilverized at 3.95c.

Spelter.—Trade is on a light order in the market for Spelter, and prices are quoted from 4.12½c. to 4.15c.

New York.

NEW YORK, January 15, 1902.

Pig Iron.—The market is strong, but not specially active in this section. The good position of Pig Iron is encouraging the starting of additional plants. It is understood that Pequest, Allentown and Macungie are getting ready to start. There has been considerable activity lately in Basic Pig, some of the Southern producers having sold round lots. We quote for Northern Irons: No. 1, $16.50 to $17.50; No. 2 X, $16 to $16.50; No. 2 Plain, $15.50 to $16; Gray Forge, $15 to $15.25; Tennessee and Alabama brands, No. 1 Foundry, $16.25 to $16.75; No. 2 Foundry, $15.75 to $16; No. 1 Soft, $16.25 to $16.75; No. 2 Soft, $15.75 to $16; No. 3 Foundry, $15.25 to $15.50; No. 4 Foundry, $14.75 to $15; Gray Forge, $14.50 to $14.75.

Cast Iron Pipe.—The amount of business in sight is very large, and it looks as though this year may become a record breaker. We quote $23.50 to $24 per ton at tidewater.

Steel Rails.—The Mexican National order for about 105,000 tons has been placed, about 50,000 tons going to German makers, while 50,000 tons has been taken by American works. It is doubtful, however, how large a proportion of this will be rolled in this country. Probably about one-half will be turned over to English mills. In the domestic market a fair amount of business is reported. We continue to quote $28 at Eastern mill for Standard Sections.

Finished Iron and Steel.—The most interesting contract on the local market, on which bids have gone in, is the material for the Rapid Transit power house, which calls for about 9000 tons of Material. The American Bridge Company has taken quite a number of export or-

ders lately. Included in these is an eight-span bridge for Peru, the roof of a power house and a number of turntables for Japan, and a power house to be built at Ultimo, New South Wales. We note also the taking of 5500 tons of bridge work for the Atchison, Topeka & Santa Fé Railroad. Prices are quoted as follows at tidewater: Beams, Channels and Zees, 1.75c. to 1.80c.; Angles, 1.75c. to 1.80c.; Tees, 1.80c. to 1.85c.; Bulb Angles and Deck Beams, 2c.; Sheared Steel Plates are 1.78c. to 1.85c. for Tank, 1.90c. to 1.95c. for Flange, 2c. to 2.05c. for Fire Box. Charcoal Iron Plates are held at 2.40c. for C. H. No. 1, 2.90c. for Flange, and 3.40c. for Fire Box. Refined Bars are 1.65c.; Soft Steel Bars, 1.70c.

P. H. Patriarche, formerly with the Crescent Steel Company, and Park E. Bell, with the Park Steel Company, have formed a partnership for continuing in the Steel business on their own account under the firm name of Patriarche & Bell. They have secured a warehouse at 215 Pearl street, where it is proposed carrying a stock of all grades and sizes of Steel most in demand.

Metal Market.

NEW YORK, January 15, 1902.

Pig Tin.—Since our last writing the market has become somewhat firmer, but it is still very quiet, as far as transactions are concerned. This condition of affairs exists both in this market and in London. Prices here advanced on a basis of 1½c., and in London the quotation was £1 5s. higher than last week. Closing prices here to-day were: Spot, 23¾c. to 24¼c.; January, 23.40c., sellers; February and March, 23¼c., sellers. London closed £104 17s. 6d. for spot and £101 15s. for futures.

Copper.—The general trend of affairs which has marked this article for some weeks past is still unchanged. The week under review has witnessed further reductions in price and consumers are not yet satisfied that the bottom has been reached. Hereafter the cutting of prices will proceed in a less open manner. The United Metals Selling Company have decided not to announce "official" prices hereafter, but are selling at figures to meet the market. Since this announcement the cutting of prices has continued in a steady fashion, following the declines of the outside producers instead of by wide declines, as heretofore. The business that is being done now is on a basis of 11c. for Lake, 10⅞c. for Electrolytic and 10⅝c. for Casting. The amount of this business is very small, however, transactions being only of a retail character. Every one expects to soon see a 10c. market for Lake. Calumet & Hecla are now selling. The New York Metal Exchange quote Lake 11⅛c., Electrolytic 11c. and Casting 10¾c. As previously noted, these prices are being shaded ⅛c. The London market closed to-day £45 10s. for spot and £45 17s. 6d. for futures. Best Selected is cabled £53. These figures mark a decline, as compared with last week. The prices of both G. M. Bs. and Best Selected show a decline of £2.

Pig Lead.—There is no change here. The market is very quiet. Business is on a small scale. The American Smelting & Refining Company quote Desilverized 4c., New York, and 3.95c., St. Louis. The London market, after declining to £10 5s., closed to-day £10 7s. 6d.

Spelter—Is easier, with spot and January selling at 4.30c. Business is not brisk. St. Louis is quoted 4⅛c. The London market closed to-day £16 10s., unchanged from last week.

Antimony.—Hallett's has declined still further. It is quoted to-day 8c. to 8¼c. Cookson's is nominally unchanged at 10¼c. and outside brands are quoted 7½c. to 8c.

Nickel.—Yearly contracts are being made on a lower basis and ton lots are quoted at 50c.

Quicksilver—Has suffered a further decline. Present prices are quoted on a basis of $48 per flask of 76½ lbs. on lots of 50 flasks or more.

Tin Plates.—There is no change in this market. The American Tin Plate Company are quoting for the second half of this year on a basis of $4.19 per box of Standard 100-lb. Cokes, New York, and $4, f.o.b. mill. London has declined to 12s. 4½d.

Iron and Industrial Stocks.

In sympathy with the general downward tendency in the stock market, the iron and steel issues have declined during the week under review, under a comparatively light business.

The Sharon Steel Company have recently issued $500,000 of additional stock, making $4,500,000 outstanding out of a total of $5,000,000. In addition bonds have been created as follows:

	Date.	Interest.	Outstanding.
First mortgage, gold sinking fund, maturing October 1, 1940..... Subject to call at par after October 1, 1910.	1900	5 g. A.-O.	$1,000,000
First mortgage on tube mill, second mortgage on other property	1901	5 g. J&D	$1,000,000
Sharon Coke Company first mortgage, $1,250,000 gold..... Subject to call at par after December 1, 1906.	1901	5 g. J&D	None.

Toward the ultimate redemption of bonds of 1900, $250,000 has been deposited with the Union Trust Company of Pittsburgh, trustee.

The capital stock of the subsidiary companies is as follows:

	Date of incorporation.	Capital stock. Authorized.	Capital stock. Issued.	Steel company owns.
Sharon Coal & Limestone Company.....	Dec., 1900	$200,000	$200,000	66⅔ p. c.
Sharon Coke Company.	Apr., 1901	2,500,000	.....	All.
Sharon Ore Company.....	1900	200,000	200,000	All.
Sharon Sheet Steel Company	Sept., 1901	500,000	500,000	All.
Sharon Tin Plate Company.	1900	800,000	800,000	60 p. c.
Sharon Steel Tube Company.	1900	2,000,000	1,000,000	All.

Boston reports indicate that the control of the Dominion Iron & Steel Company now rests with the Canadian interests represented by James Ross, Henry M. M. Whitney of Boston having parted with his interests.

The authorized capital stock of the Ansonia Brass & Copper Company has been increased from $1,500,000 to $2,000,000.

The recent increase in capital stock of the Westinghouse Machine Company of Pittsburgh was from $3,000,000 to $5,000,000, instead of from $2,500,000, as reported. The preferred stock owned by George Westinghouse amounts to only $150,000, instead of $1,500,000, as stated. Mr. Westinghouse has relinquished his right as a preferred stockholder and the stock of the concern is now all of one class.

Dividends.—The Susquehanna Iron & Steel Company have declared the usual semiannual dividend of 3 per cent., payable January 27 to stock of record January 15.

The Washington Coal & Coke Company, Dawson, Pa., with sales offices in Pittsburgh, have sent out to their friends a morocco bound diary for 1902. There are two dates to a page, and the book also contains valuable statistics. Some half-tone views are given of the different coal and coke plants of the Washington Coal & Coke Company, and the diary is a most complete publication in all respects. The officers of the Washington Coal & Coke Company are M. M. Cochran, president; W. Harry Brown, vice-president; J. S. Newmyer, general manager, and John H. Wurtz, secretary and treasurer. The general sales offices are in the Conestoga Building, Pittsburgh, with N. P. Hyndman in charge.

The Parkersburg Iron & Steel Company of Pittsburgh, with sheet mills at Parkersburg, W. Va., have bought the stamping works of the Budke Mfg. Company of Washington, Pa., and will remove the plant to Parkersburg in the spring. The Parkersburg Iron & Steel Company are now operating four sheet mills at Parkersburg and two more are being built.

W. N. Cleveland has been appointed manager of the branch office of the American Bridge Company, at Columbus, Ohio.

CORRESPONDENCE.

The Decadence of the Cast Iron Car Wheel.

To the Editor: An article in your issue of January 2, headed "The Decadence of the Cast Iron Car Wheel," may have a tendency to reflect somewhat upon the merits of a product which not only gives more mileage and better service every day throughout the United States than any other class or grade of wheel in railroad service, but also has been improved very considerably, despite the occasional newspaper articles using terms of criticism presumably in the interest of some other product or manufacturer. It must be conceded by every one at all familiar with the car wheel business that when the drop test was first imposed as a specification for testing the relative merits of wheels many manufacturers failed to meet the specification and many hundred wheels were condemned in consequence, although at first the only demand was that the wheel should stand five blows of a 140-pound hammer falling 12 feet upon the hub of the wheel. This specification was increased by degrees to 8, 10, 12 and now some roads demand 15 blows, and all manufacturers meet the specifications without difficulty.

After the drop test came the thermal test, which specification many manufacturers also found difficult to meet. Most of them had never even seen such a test made, to say nothing of being prepared to go through it successfully. Now it is practiced by nearly all of the car wheel manufacturers and is demanded by probably half of all the railroads.

One hundred and three wheels must be presented for every 100 to be shipped, and to say that the selection of three wheels at random from a carload and finding that they successfully pass both drop and thermal tests does not indicate a satisfactory product, is simply to beggar the question.

The use of old wheels, as mentioned in your article to which I refer, is by no means an unmitigated evil. I will defy any one to make an absolutely satisfactory cast iron wheel without at least a portion of old wheels, which proportion would be more or less according to the practice of the foundry making the wheels.

As a matter of fact, cast iron wheels have proven entirely satisfactory when the proper weight was decided upon, and projections or outlines of the wheel were intelligently specified for the service in which the wheel was to be used. An attempt was made for a year or two to make light wheels well adapted for light freight service fulfill all the requirements demanded for the heavier cars now in use. A prominent railroad has recently practically acknowledged that this attempt was erroneous by changing its specifications, and notifying the manufacturers that hereafter wheels for this service would be increased in weight 17 per cent. This is at least a move in the right direction, but the capacity and load of the car have been increased at least 70 per cent. It is probable that a proportionate increase in the weight of the car wheel may give satisfactory results, but considering the relative strength of the cast iron wheel and steel tired wheel, and the fact that the latter weighs probably on an average about ½ a ton each, the new weight for the cast iron wheel is by no means excessive.

Questions of price also enter into the very foundations of the question of car wheel development to such an extent that there is really no relative comparison between the steel tired wheel and the cast iron wheel, except to the advantage of the latter.

The immense work now being done by the cast iron wheel is yearly becoming better appreciated. The use of better grades of material is being encouraged, greater mileage is being obtained and with increased weights and greater strength there is no real reason why the cast iron wheel should not eventually supplant entirely the steel tired wheel, or steel wheel so called. All the manufacturers ask is a fair chance, and they will do the rest.

I venture to predict that the results which will be obtained from cast iron wheels during, say, the next five years, will be a rude shock to some of those who now cry out at the "decadence of the cast iron wheel."

Yours respectfully,

CHAS. V. SLOCUM, President,
KEYSTONE CAR WHEEL COMPANY.

PITTSBURGH, PA., January 13, 1902.

PERSONAL.

P. D. Mackey, for 22 years connected with the Edgar Thomson Steel Works, at Bessemer, Pa., has resigned and has been made superintendent of the Bessemer Works of the Republic Iron & Steel Company, at Youngstown, Ohio, succeeding S. McDonald, who recently resigned.

Henry Phipps has offered to build an extension to the conservatory, in Schenley Park, Pittsburgh. Mr. Phipps contributed the money for the original buildings.

Charles A. Bunting, engineer at the works of the Pennsylvania Steel Company, at Steelton, Pa., has been appointed superintendent of the Allentown Rolling Mills, Allentown, Pa.

A. L. Hammerberg of the Tennessee Coal, Iron & Railroad Company of Ensley, Ala., has been appointed chief mechanical engineer of the Youngstown Iron, Sheet & Tube Company of Youngstown, Ohio. He was formerly connected with the Duquesne Works and later with the Wellman-Seaver Company of Cleveland.

Harry W. Armstrong, for many years superintendent of the Verona Tool Works of Verona, Pa., has been elected president of the James H. Baker Mfg. Company of Verona.

W. H. Purcell, superintendent of the Morgan Engineering Company, at Alliance, Ohio, has resigned his position. J. L. Lloyd has been appointed his successor, C. L. Taylor has been made chief engineer, T. D. Russell assistant treasurer and A. F. Morris manager of the sales department. The above named have become members of the firm, and other employees will be taken in as soon as conditions justify. R. K. Wilthman has been appointed superintendent of maintenance and F. E. Farmer superintendent of production. Mr. Purcell, who resigned, has been made general manager of the Alliance Machine Company, at Alliance, Ohio.

S. McDonald, who recently resigned his position as superintendent of the Bessemer steel plant of the Republic Iron & Steel Company, at Youngstown, Ohio, has connected himself with the Youngstown Iron, Sheet & Tube Company, and will superintend the erection and operation of the new basic open hearth steel plant to be built by that concern in Youngstown.

George H. Tatnall of Pittsburgh has resigned as general manager of the Schonthal Iron & Steel Company, at Cumberland, Md. He has been succeeded by B. Schonthal of Columbus, Ohio.

H. A. Reyer has severed his connection with the Crucible Steel Company of America, at Denver, Col., and will take charge of the Denver branch of the Colonial Steel Company, having opened an office at 203 Quincy Building, Denver, Col.

H. S. Pebbles has resigned as traveling salesman for the Howe-Brown Department of the Crucible Steel Company of America, at Chicago, to accept a similar position with the Colonial Steel Company, with offices at 610 and 612 Northern Office Building, Chicago.

The Union Foundry & Machine Company of Pittsburgh are furnishing a large amount of equipment for the new shovel and tool works being built by the Berkley Springs Shovel, Stamping & Tool Company, at Berkley Springs, W. Va.

Vincent P. McCully, secretary of the Warwick Iron Company of Pottstown, Pa., and a prominent business man of Philadelphia, died on January 3, at his home in that city, aged 74 years. He was born at Port Elizabeth, N. J., and had been engaged in a number of different industrial enterprises in Philadelphia. Mr. McCully was one of the founders of the Commercial Exchange of that city, having been the president of the old Chamber of Commerce.

Automatic Weighing Machine Company.

The Automatic Weighing Machine Company of Boston, Mass., and 111 Fifth avenue, New York, have acquired the entire weighing machine interests of the Pratt & Whitney Company of Hartford, Conn., including all patents and special plant for manufacturing weighing apparatus. They have also acquired the patents, equipments and business of the New England Automatic Weighing Machine Company of Boston and desire to secure additional capital to increase the plants and extend their business.

For this purpose subscriptions are being taken to $300,000 of the preferred stock of the Automatic Weighing Machine Company at $100 per share, with a bonus of an equal amount of common stock.

The company have organized under the laws of New York with a capital of $3,600,000, of which $600,000 is preferred stock. The company, following the precedents of the United Shoe Machinery Company and the Mergenthaler Linotype Company, lease their machines to manufacturers and packers.

The officers and directors of the company are: P. Lorillard, Jr., president; Walter L. Clark, vice-president; C. A. Leonard, secretary and treasurer. Directors: P. Lorillard, Jr., New York; Walter L. Clark, vice-president Niles-Bement-Pond Company, New York; C. A. Leonard, New York; William Barbour, president Barbour Bros. Company, New York; S. W. Winslow, president United Shoe Machinery Company, Boston; George W. Brown, treasurer United Shoe Machinery Company, Boston; Elmer P. Howe, counselor at law, Boston, Mass.; John H. Hanan, vice-president United Shoe Machinery Company, New York; Robert C. McKinney, president Niles-Bement-Pond Company, New York; C. E. Halliwell, vice-president Continental Tobacco Company, New York; C. S. Hill, Boston, Mass.; W. P. Homans, New York.

British commercial missionaries certainly penetrate to the uttermost parts of the earth. Not, possibly, with a rifle in one hand and a Bible in the other, but, as in the case under notice, with tea in both hands. One of these indefatigable persons has recently proselyted in Southern Persia, and a most interesting narrative of some of his happenings is published at length in the Journal of the Society of Arts. Even in the desert he pursued his avocations and endeavored to obtain orders from individuals with names indigenous, such as Seith Suleyman and Mohammed Ali Brothers and others. These sons of the soil were by no means averse to trading, and were exceedingly well posted up on prices, so if the English missionary intended to treble them, as the natives did in hiring him camels, he made an error, and was forced to drop to the list and discounts on the start, if he meant to do any business. In the desert shops the traveler found most amazing stocks of goods; to wit, white duck, all sorts of cotton prints, canned goods, grenadine, plush, sparklets, boots, ladies' shoes, lamps, chandeliers, lithographed pictures, scent bottles, mats, cigarettes, carpets, stationery of all kinds, medicines, clocks, glassware, tea pots, furniture, padlocks, hat racks (in a land of turbans!), fancy match boxes and jewelry. The traveler told the merchant that he could not see where he got his trade from, which was a little impertinent, but the trader said that customers were plenty, and he got his money back. The British banking system is in force, and it is not at all difficult to obtain funds at almost any point along the routes of the caravans. The Persian Government collects duties upon all goods entering their country to the amount of 5 per cent., taxing the cost of carriage as well as the invoices! So it appears that the "heathen Chinee" is not the only one who has "tricks that are vain and ways that are peculiar." Every fourth or fifth shop in the desert is a tea shop, and the general preferment is for Chinese teas, as against the more expensive Ceylon and India teas; an enormous quantity in the aggregate is sold. Deliveries of orders are somewhat slow at present, but this will be remedied in the near future by railway lines now in course of construction by both the Russian and German Governments.

The Consolidated Pneumatic Tool Company, Limited.

Details are now being worked out in perfecting the organization of a consolidation of four of the important manufacturers of pneumatic tools in this country, and one English concern. The new company are to be known as the Consolidated Pneumatic Tool Company, Limited. They will be capitalized at $5,500,000. It is expected that the charter will be filed in New Jersey within three weeks.

The new company will combine the interests of the Standard Pneumatic Tool Company of Aurora, Ill., and New York, the Philadelphia Pneumatic Tool Company of Philadelphia, the Cleveland Pneumatic Tool Company of Cleveland, the Standard Railway Equipment Company of St. Louis and the International Pneumatic Tool Company of London.

The unique principle of the new company will be that its preferred capitalization will be on the basis of the tangible assets of the constituent companies, and that the common stock will be guaranteed a 12 per cent. dividend.

Almost all of the stock of the new company will be absorbed by the constituent companies. E. N. Hurley, the president and founder of the Standard Pneumatic Tool Company, is the prime mover of the consolidation. Flint, Eddy & American Trading Company are assisting in the organization and are now working out the financial details in connection with the project.

Mr. Hurley stated to a representative of *The Iron Age* that the company are to be formed solely for the purpose of enlarging the capacity of the various plants in order to meet the demand and to bring about the resultant reduction of operating expenses. The company do not intend to antagonize any other interests or demoralize the interests of the pneumatic tool industry.

Mention was made in *The Iron Age* a few weeks ago of commissioners from English railways visiting this country with the object of studying our methods of transportation, with the intention of adopting them upon their own lines. As stated in our article, the very light loads hauled by one engine on English railways greatly increased the cost of freights, and it was the intention to ascertain all the facts possible about American systems that induced the commission. It now appears that the difficulty is not wholly with the small cars and engines in vogue, but the terminal facilities themselves are directly in fault, and before any radical relief from high charges can be expected there must be an entirely new arrangement of the lines themselves. What this means can only be imagined by those familiar with railway business, combined with exact knowledge of the situation throughout the United Kingdom. At a recent meeting of railway directors one of them pointed out that it was much easier to suggest changes than it was to carry them into practice, and in regard to long hauls of heavy wagons that there was not at this time a single shipping port, iron works or gas works, any works at all for the matter of that, in Scotland, that was capable of dealing with a wagon carrying 20 tons of coal, nor were there half a dozen collieries in Scotland whose appliances for separating coal were capable of taking in wagons carrying 30 tons of coal, so there would seem to be formidable obstacles in the way of hauling even 30-ton loads in Britain, to say nothing of 50 tons hauled in this country. The directors of the Caledonian Railway "laid down," as we may say, on the long haul, 30-ton car proposition, and informed those interested in it that the company were quite willing to provide larger cars, but before they would do so shippers must improve their facilities, which would seem, from our point of view in this country, a very canny way out of a situation that bristled with difficulties.

Wages of puddlers in the rolling mills in the Central West, where the Amalgamated Association scale is signed, will receive an advance of 25 cents a ton for puddling and finishers an advance of 2 per cent. in January and February.

The New York Machinery Market.

NEW YORK, January 15, 1902.

Reports gathered in the trade during the last week were not quite so buoyant as those of the preceding weeks. Consumers are not coming to the front with their orders as promptly as was expected of them. Machinery merchants had calculated upon the consummation of a good deal of business that failed to materialize. This is especially true in the instance of the several large machine tool inquiries that have been in the market for some time. Only one of these projects has been closed, and that was one of the smallest of the lot. The Lehigh Valley Railroad Company placed orders for some $35,000 to $40,000 worth of machine tools, the list for which has been out for some weeks.

Local business was pretty fair, however. That is, in small orders filled from warerooms. Inquiry has fallen off slightly in all lines of machinery. In the boiler and engine trade business was quite dull. Prices are unchanged.

One very large new project was announced during the week. The International Steam Pump Company of 120 Liberty street purchased 33 acres of ground at Harrison, N. J., for a building site. We are advised on excellent authority that the largest and most modernly equipped pump plant in existence will be erected on the site. Work will be commenced, as our informant states, "as soon as the frost is out of the ground." Plans for the buildings are being formulated by the engineers in the employ of the company. Several sets of rough sketches have already been made and were submitted to the directors of the company to-day. A general plan was decided upon, and the engineers will now work on the lines indicated in formulating the complete plans.

It is the intention of the company to remove and consolidate at this point the two Henry R. Worthington plants which are located at Brooklyn, N. Y., and Elizabethport, N. J. It was rumored in the trade that it was also intended to bring some of the other plants of the company to this point. This, however, was denied by an officer of the company, who stated that extensive improvements are now being made at the Blake-Knowles plant, at East Cambridge, Mass.; the Deane works, at Holyoke; the Snow plant, at Buffalo, and the Laidlaw-Dunn-Gordon works, at Cincinnati.

The new Harrison plant will consist of ten buildings of various dimensions. The exact size of each building has not been decided upon. The plant, it is said, will be equipped with every appliance that will add to its general efficiency. The matter of equipment is now under consideration, as it is intended to decide entirely upon the full scope of the plant before the work of erection is commenced.

The International Steam Pump Company have acquired control of the Clayton Air Compressor Company.

A new plant will be erected by the Dow Composing Machine Company of Room 2003 Park Row Building, New York. It is expected that the machine equipment for the plant will be purchased within 60 days. The company were incorporated last week with a capital of $3,000,000. The site for the new plant has not yet been selected. As soon as this has been done work will proceed immediately. Type setting machines will be produced. The president of the company is Alexander Dow and C. P. Mackie is the treasurer.

The Electric Furnace Company of 52 William street, New York, are in the market for turbines, generators, transformers and other power plant accessories. The company are erecting an 8000 horse-power hydraulic electric power station at Elizabethtown, Tenn. None of the equipment has been purchased yet.

The Trenton Iron Company of Trenton, N. J., have just concluded purchases of a very extensive equipment of machinery for the manufacture of wire rope. This department of the concern's works has been added to very materially. For the present no further equipment is desired.

A large list of machinery is being prepared by the New York Radiator Company, who are about to erect a large plant at East Utica, N. Y. H. Gilbert Hart, president of Hart & Crouse Company, of Utica, N. Y., is interested in the new company. The New York Radiator Company will make a full line of cast iron hot water and steam radiators. The new shops are to be completed by June.

The American Power & Construction Company of 32 Broadway, N. Y., have just prepared plans for a very complete and up to date yacht building plant and storage basin to be built at Bensonhurst, N. Y. The new plant will cover 25 acres and the boat building shops will be equipped with the latest machinery and appliances. The main machine shop will be 50 x 160 feet. The present yacht storage basin and works of the company are located at Gravesend Bay. The officers of the company are as follows: James M. Doremus, president; Frederick Klingman, vice-president; Samuel A. Dunn, treasurer; Frank A. Berthold, secretary, and A. Perry Bliven, general manager.

A new plant is to be built at Harrison, N. J., by the Driver-Harris Wire Company of 84-96 Mechanic street, Newark, N. J. Considerable new machinery will be required. The company manufacture at present resistance wires and fine wires of all metals. At the new works other lines of wire manufacture will be taken up.

The Lappin Brake Shoe Company of Bloomfield, N. J., have recently rented the old West Shore machine shop from the New York Central road at Buffalo, N. Y., and are installing a plant there for the manufacture of brake shoes. The policy of the company is rather to distribute their plants at the different railroad centers than to manufacture all at one point. The company now have plants at Bloomfield and Chicago, and will in the course of six week be operating their plant in Buffalo. The three plants will give the company a capacity of about 150 tons per day. W. S. Dehart, the secretary of the company, is in charge of the new work.

The Bagby Furniture Company of Baltimore, Md., have an inquiry out for a boiler and engine. A little later they will purchase a sprinkler equipment, shafting, pulleys, belting, pumps, feed water heaters and other accessories. The concern are adding three three-story factory buildings to their plant.

Machinery is now being purchased by the Standard Pneumatic Tool Company for installation in the large plant which they are erecting in Germany. This plant has been necessitated owing to the unprecedented demand for Little Giant pneumatic tools in Europe, particularly in France, Germany and Holland, which the company are unable to supply, although they recently greatly enlarged their plant at Aurora, Ill. The export business of the company during the month of December, 1901, was 100 per cent. greater than the corresponding month of 1900, and there is every indication that there will be a proportionate increase during the present year. W. H. Tew, formerly connected with the American Locomotive Company, Brooks Works, Dunkirk, N. Y., and later with the mechanical engineering department of the Chicago & Northwestern Railroad, has been appointed managing director of the newly organized German branch, with headquarters at Kloster Str., 13-15a, Berlin.

The Wray-Austin Machinery Company of Detroit, Mich., have purchased the stock, fixtures and business of the Anderson-Wales Pulley Company, also of that city, manufacturers of the Peerless wood split pulleys, and will conduct the business from their offices, 171, 173 and 175 Woodbridge street. The business will hereafter be conducted under the name of the Peerless Pulley Company. They contemplate the manufacture of wood pulleys for all purposes, and are arranging for an equipment that will allow them to manufacture on an increased scale. The officers of the Wray-Austin Machinery Company are Frank T. Caughey, president; William J. Wray, vice-president, secretary and manager, and Charles M. Cairan, treasurer.

Hoover, Owens & Rentschler of 39 Cortlandt street have been awarded the contract for the 1500 horse-power cross compound engine which the Union Bag & Paper Company will install at their plant at Sandy Hill, N. Y. The engine is to be direct connected to a 1000-kw. General Electric generator.

The Worthington Company, 39 Cortlandt street, have been awarded the contracts for the complete equipment of the new power station of the Olean Street Railway Company of Olean, N. Y. They will furnish two 200 horse-power Franklin water tube boilers and two 300 horse-power Hamilton-Corliss engines. This company also received the order for three 500 horse-power Franklin water tube boilers to be installed in the new plant of the Doylestown & Easton Street Railway Company of Doylestown, N. Y.

A new price-list which went into effect to-day has been issued by Naylor Brothers of Peekskill, N. Y., manufacturers of pulleys, hangers, shafting and power transmitting machinery. The new price-list affects principally pulleys and hangers.

The American Steel & Wire Company's Pension Department.

President William P. Palmer, Cleveland, Ohio, has issued a circular letter dated December 31, 1901, making an announcement of the creation of a pension department for the benefit of all the employees of the American Steel & Wire Company, taking effect January 1, 1902. The announcement is as follows:

"By the action of the officers of the American Steel & Wire Company of New Jersey, a new department has been created. The department will be operated under the title of 'The Pension Department,' having for its purpose the retiring from active service and placing on a pension roll of all employees who have rendered to the company or their predecessors long and faithful service, and who have attained an age or physical condition which necessitates a relief from duty.

"The organization for conducting the Pension Department provides that a Trust Committee consisting of Wm. Edenborn, J. S. Keefe and the president shall have charge of the fund set aside by the company for the purpose of conducting the Pension Department; also that a Board of Administration consisting of J. S. Keefe, P. W. Moen, C. L. Miller, W. W. Herrick and the president, the latter to act as chairman, shall leave power to make and enforce rules and regulations for the operation of the department, to determine the eligibility of employees to receive pension allowance, and prescribe conditions under which such allowance may be made.

"Before employees can be retired from active service and placed on pension roll the authority of the Board of Administration must be obtained.

"Neither the action of the Board of Administration nor the Board of Directors, in establishing benefit or pension system, nor any other action now or hereafter taken by them, or by others in charge or connected with this pension fund in the inauguration and operation of the department, shall be construed as giving any officer, agent or employee of the company a right to be retained in their service, or any right or claim to any pension allowance, and the company expressly reserve the right and privilege to discharge at any time any one employed for the company, when the interests of the company in their judgment may so require, without liability for any claim for pension or other allowance than salary or wages due and unpaid.

"Employees placed on pension roll will be expected, on request of the officers of the company, to report and give to the company the benefit of their experience, and act as advisers when called upon.

"A Mill Committee will be appointed at each mill of the company, the superintendent being chairman of same. This committee to furnish the necessary data, from which the Board of Administration will decide as to the eligibility of employees for pension.

"W. W. Herrick is appointed manager of the Pension Department, with headquarters at Cleveland, Ohio.

"The district managers will take up the matter fully with their superintendents and others who employ men, making such explanations to them as will result in the carrying out of the purpose and intent of the department."

It will be observed that, unlike most plans for pensioning employees, this does not contemplate any contributions to a pension fund by the workmen themselves.

Lehigh Valley Changes.

The Allentown blast furnaces owned by the Lehigh Coal & Navigation Company of Philadelphia have been leased to the Empire Steel & Iron Company for a term of years. Repairs are being pushed rapidly and it is expected that one of the furnaces will be in blast in March. The intention is to run on foundry and basic iron. A. T. Clymer, who has been for many years the manager of the property, will continue in the same relation for the Empire Steel & Iron Company.

The Empire Company have also repaired and are about to blow in their furnace at Macungie. This, with Allentown, will make ten active furnaces owned or controlled by the Empire Steel & Iron Company.

S. B. Patterson, well known as one of the ablest and most experienced iron masters of the Lehigh Valley, who for many years has been the successful manager of the Andover Iron Company, has resigned that position to accept the office of treasurer and assistant to the president of the Empire Steel & Iron Company, and has already commenced upon his duties.

Important Transactions in Virginia Properties.

Interests connected with the Empire Steel & Iron Company have purchased from F. C. Dinniny, the well-known Oriskany ore property known as Wilson Run, together with the blast furnace at Iron Gate, Va. This is the property which for some years has been operated under the name of the Allegheny Iron & Steel Company. The price paid is not mentioned, but it is understood to be in the neighborhood of $1,000,000. Possession is to be taken at the expiration of the present lease of the property to M. D. Chapman of New York.

It is understood that a new corporation are being organized, to be known as the Oriskany Ore & Iron Company, and that this new company will take over the Victoria and Shenandoah Furnace properties and the Potts Valley Iron Company, these interests aggregating about 30,000 acres of mineral lands, several developed ore mines, and two good blast furnaces. These with Iron Gate give the new company three furnaces. Extensive repairs which have been made to the Victoria Furnace in the past two years have resulted in making it one of the best equipped in Virginia.

It is expected that Charles H. Zehnder, formerly president of the Jackson & Woodin Mfg. Company of Berwick, Pa., and later president of the Dickson Mfg. Company of Scranton, Pa. (lately merged in the American Locomotive Company), will be president, and Mark T. Cox of Robert Winthrop & Co., 40 Wall street, New York, treasurer. The practical management will be entrusted to W. W. Taylor, who has been the successful manager of the Dinniny property for many years. It is part of the plan of the new company to improve so as to largely increase their output of the Oriskany ore, which has been unique among Southern hematite ore properties for the extent, high grade and cheap cost of its product.

The J. W. Paxson Company, Philadelphia, Pa., have taken over the entire business of the Mahoning Facing Mills Company, manufacturing pipe blacking, car wheel mineral and anthracite facings, with mills located at Leslie Run and Lehighton, Pa., on the Lehigh River. Both mills having steam and water power will be operated, while the entire business will be transacted at the Philadelphia office of the J. W. Paxson Company.

In referring to the record of wire rod output at the Rankin works of the American Steel & Wire Company, at Rankin, Pa., on Monday, January 6, amounting to 586,070 pounds, it was made in one turn of 12 hours instead of two turns of 24 hours. This is the largest output of rods ever made in a 12-hour turn.

Catalogues Wanted.—J. F. Mathews, Oxford, N. J., wishes to receive catalogues from makers of small boilers of about 1 horse-power.

OBITUARY

MORITZ LASSIG.

Moritz Lassig, who was for many years one of the most prominent bridge builders in this country, died suddenly at his residence in Chicago on the 6th inst., aged 71 years. Mr. Lassig was born in Saxony, Germany, in 1831, and was educated at the School of Technology at Chemnitz. He came to America in 1851, and located in the West, taking up his residence in Chicago a few months after his arrival. He may really be regarded as one of the pioneers in bridge building. He first became connected with the bridge business by entering the employment of L. B. Boomer, subsequently securing more experience in the same line with S. S. Post, another bridge builder of great prominence in those days. He subsequently returned to Chicago and re-engaged with Mr. Boomer, whose business gradually grew into the old American Bridge Works, and in time he became the manager of the plant. It was for many years one of the largest bridge establishments in the country. In 1877 Mr. Lassig started his own works at Fourteenth and Clark streets, Chicago, where he continued until the property was condemned for railroad purposes in 1883. He then established the Lassig Bridge & Iron Works, at Clybourn and Wrightwood avenues, Chicago, making this establishment in capacity next to the largest works in the United States, and equipping it with the best machinery and appliances. He severed his connection with the bridge business in May, 1900, when he sold the plant to the American Bridge Company. It is now known as the Lassig plant of that company. Mr. Lassig early attained a high reputation for the character of his work and for his absolute reliability. An unusually large part of his business came to him because of his unfailing performance of any contract or promise, even though only verbal. The bridges which he built were confined exclusively to railroad work. Few railroads can be found in the West that do not have some Lassig bridges, while quite a number of railroads have hardly any other bridges on their lines. On the day of his death he was making preparations to start on the day following for a trip to Italy for the benefit of his health.

NOTES.

EDWARD R. JANES died on January 8, from heart disease, at his home, 258 West 107th street, New York. Mr. Janes was born in Hartford, Conn., on May 3, 1829. While still a boy he started in business, joining his father's firm of Janes, Fowler, Beebe & Co., stove makers and iron founders. In 1840 the firm moved to New York City, where Mr. Janes had since lived. It was this firm which had charge of the iron work on the dome of the Capitol at Washington. The work was begun in 1860, but was held up because of the war, the iron girders at one time being torn down and used to barricade the Capitol. Mr. Janes had been retired from active business for several years, and the business had been conducted by his sons under the name of Janes & Kirtland, at 725 Sixth avenue, New York.

THOMAS B. WHITE, an iron manufacturer of Baltimore, Md., died on January 3, aged 61 years.

HENRY E. DARBY of Watervliet, N. Y., died on December 30, aged 52 years. He was born in Troy, N. Y., and when a young man entered the employ of the Burden Iron Works, and later was placed in charge of the machine shop at the Albany Iron Works. Mr. Darby was then made superintendent of the Bessemer Steel Works. In 1894 he accepted a position at Johnstown, Pa., with the Johnson Company. He was later promoted to take charge of a plant controlled by the same company, at Lorain, Ohio. Mr. Darby subsequently returned to his native city and was appointed superintendent of the Breaker Island plant of the Troy Steel Company. At its suspension he accepted the superintendency of the Troy Stamping Works, which position he held at the time of his death. Mr. Darby was also president of the Adams Laundry Machinery Company of Troy.

ALBERT C. HAWES, for many years prominently identified with the Western pig iron trade, died January 8 at Carlsbad, New Mexico, aged 42. Mr. Hawes was born at San Antonio, Texas, but was reared in Kentucky. He first became connected with the pig iron business by securing a position with Matthew Addy & Co., Cincinnati. Later he was for some time engaged with Geo. H. Hull & Co., Louisville. Removing to Chicago, he first represented Southern furnace interests, among them being the Tennessee Coal, Iron & Railroad Company. Subsequently he became the Chicago representative of Matthew Addy & Co. He severed this connection to engage in business with other members of the pig iron trade, the firm passing through several changes, but being best known as Forster, Hawes & Co. Retiring from this firm, he again became the Chicago representative of Matthew Addy & Co., continuing until some three years since, when the condition of his health forced him to seek a more salubrious climate in the Southwest.

Aluminum in the Electrical Industries.

In the course of a paper on the subject of "Aluminum and Its Uses," read before the Glasgow section of the Institution of Electrical Engineers recently, W. Murray Morrison, engineer and manager of the British Aluminum Company's Works, declared that the production of aluminum in the present year amounted to about 5000 tons, or 100 times as much as Roscoe, 13 years ago, in addressing the Royal Institution on the capacity of the Oldbury Aluminum Works, looked upon as a phenomenal production. Lately, owing to the high price of copper and the decreased price of aluminum, the use of the latter as a bare wire conductor had received a good deal of attention. At Foyers they had many tons of aluminum wire, cables and strip in use, and had designed various joints for use in connection with them. They had a telephone line running a distance of 6 miles over exposed country, supported on poles about 50 yards apart. The joints in this line had given no trouble, but the wire in the most exposed positions had broken several times during very high winds. The wire being of a pure aluminum and being of so small a diameter accounted for this, and there was no doubt that for telephone or telegraph lines of small diameter it was necessary to use an alloy. Comprehensive experiments with the view to finding a suitable alloy had been and were being carried out, lines being also under trial at the present moment by the post office authorities and others. It was believed that solutions of the problem had been arrived at, and no doubt aluminum wire for those purposes would be ultimately as successful as copper ones, the success of which, it must be recollected, also entailed endless difficulties and failures in the early days. For connections, flexible and strip, between dynamos and furnaces, a larger number of tons of aluminum were in use with the most satisfactory results. This was a case in which, even were no actual saving in the first cost secured, it would still be preferable to use aluminum in place of copper, for the saving in labor of handling was most important. In America much more had been done than in this country in the way of utilizing aluminum wire, and that the experience of American engineers was satisfactory was proved by the fact that aluminum had been used, or was specified, for all the later large transmission schemes. When first asked to put down aluminum instead of copper, he felt great misgivings, having the usual prejudices in favor of the latter, but after nearly six years' practical experience of the handling and use of aluminum wires, his opinion was entirely altered, and he was fully convinced of the advantage to be gained by their use; provided always that the first cost compares favorably—due consideration being also given to the reduced weight—with that of copper for the same conductivity. With regard to insulated cables in low tension work, aluminum could not compete with copper at present prices, unless the cost of dielectrics fell very considerably, as in such cases the radial depth of insulation was determined almost entirely by considerations of mechanical strength, durability and Board of Trade regulations. Should the price of copper increase, or that of aluminum diminish, as it seemed quite likely to do with a more extended use, then there would no doubt be competition.

HARDWARE.

ONE of the questions which confronts every large and growing concern relates to the loss of the feeling of individuality among employees which is often the penalty of success in extending business. That such a feeling is a serious menace and one that discipline and system are not likely to counteract needs no special setting forth. The success of every business depends primarily on the men who compose it, from the chief executive down to the lieutenants. In military and philanthropic service the spirit of self abnegation, coupled with loyalty to a cause or a principle, has been found to be one of the strongest impelling motives of enthusiasm, but in commerce nothing can be relied upon to take the place of an enlightened self interest. Failing in this, there still fortunately endures in almost every man a sense of duty which can be reckoned upon for at least a fair performance of daily work.

Many towns and small cities scattered throughout the country have within recent years derived both commercial and social advantage from the presence of manufacturing plants in the Iron and Hardware industry. The owners and officials of the plant usually resided in the town and its progress was their pride, for its principal importance came from the fact that it was the location of their works. When these companies were absorbed by some of the various great aggregations the town felt the loss keenly. If the plant was not dismantled and concentrated elsewhere, it simply became a "branch" or was known only by a number. Its individuality was gone and it became merely an unimportant part of a great commercial machine. It was left in charge of chief clerks and lieutenants, upon whom is apt to fall a sense of isolation and a spirit of discouragement. They no longer work under the eyes of their principals, and their results are embodied in cold, matter of fact reports. The feeling is rife that they are a long way, both physically and in spirit, from those metropolitan central offices whence promotion and power emanate; that preferment goes by favor and that pulls may be more potent than faithful performance of duty.

The question as to how this feeling is to be checked is one of the problems which must command the attention of those in management of large consolidations of manufacturing interests. That it can be in good measure overcome there is little reason to doubt, but to secure this there must be an intelligent recognition of the tendency, accompanied by wise action, which shall preserve the individuality of employees, giving them incentives to faithful and enthusiastic work in the assurance that it will be appreciated at its true worth and given due recognition. In this connection it is encouraging to note, as an evidence of foresight on the part of one of these giant corporations, that plans are under way to put into effect a profit sharing system, and otherwise to encourage the ambition and stimulate the best in those whose interest might otherwise falter as they regard themselves as mere insignificant parts of a great machine.

While the danger of the loss of the sense of individuality and hopefulness is perhaps most imminent in connection with the operation of the great consolidations, the tendency is to be found in every highly organized business and should be guarded against in an intelligent and broad minded way. The problem for merchants and manufacturers is, in connection with the use of a detailed and comprehensive system which is apparently indispensable to success, to preserve a proper *esprit de corps* all along the line.

Condition of Trade.

Manufacturers in some lines report an exceptional volume of new business since the opening of the year. This is notably the case in Wire and Wire Nails, and for some other goods there has been a very satisfactory demand. The trade in general have not, however, taken up the completion of their ordering for stock, and the volume of business accordingly has not assumed its natural dimensions. The buying for several of the season lines and for miscellaneous goods was in many cases done earlier than usual owing to the confident tone which pervaded the market during the closing months of the year, and the requirements for the early part of the present year were thus in good part sufficiently covered. Manufacturers are not unwilling thus to have an opportunity to complete their assortments and to get their warehouses at least in part filled. The general feeling is that the volume of business is going to be large, and preparations are being made by both the wholesale and retail trade to lay in a good supply of goods. The strength in the iron market, which seems assured for some time to come, gives tone to values in the manufactured products, and indicates that with a continuance of active business prices will be generally maintained. Certain lines owing to special influences are subject to suspicion. The competition of outside manufacturers is having effect on combination prices in several lines, and it may be that there will be some irregularities in such cases. Concerning one line, in which prices are very unsatisfactory, yielding little if any profit, one of the manufacturers intimates facetiously that cost and selling price are so nearly alike that it is difficult to distinguish one from the other, and adds pathetically that unless there is some understanding between manufacturers the only hope for improved conditions is that the buyers will grow sympathetic witnessing the manufacturers' distress and insist on paying higher prices. While this is an extreme case and manufacturers generally give a much more cheerful report, there is no doubt that the margin of profit on many goods which are regarded as bringing good prices is much less than it is supposed to be. This is on account of the rise in the cost of the raw material, the difficulty of obtaining it, and especially the fact that wages are gradually creeping up. This influence has had the effect of making last year's business with some manufacturers less remunerative than it should have been in view of its volume and the generally excellent condition of the trade. This increased cost of producing goods is an important factor in the situation, and argues at least for the maintenance of values while existing conditions continue. Reports from the retail merchants, whose business is the real barometer of trade, are, on the whole, very satisfactory, and indicate a large movement of goods during the first half of the year, if not into the fall and winter months. Export trade presents no specially new features, but is feeling, principally in the heavy lines, the effect of the lower values for iron products which are ruling in the European market.

Chicago.

(By Telegraph.)

The volume of Hardware business is being greatly stimulated by the exceptionally heavy trade in Wire Nails and other Wire products. The possibility of an

advance in Wire prices has quickened the decision of dealers throughout the West and Northwest to lay in stocks for their spring trade. This movement has carried with it a good business in the general line of Hardware. The conditions have further been exceedingly favorable for the prosecution of outdoor work, which involves the consumption of much Hardware. Open weather has continued for an unusually long period in midwinter. The demand in lines related to Hardware is much better than at the corresponding time last year, although business at that time was considered exceptionally good. The Hardware trade in this locality will be better cared for this year than ever before, as all jobbing houses are improving their facilities and putting themselves in a position to handle their business to much better advantage. The Heavy Hardware trade is fully as active as Shelf Hardware, owing to the strong demand coming from all classes of manufacturing consumers. It has seldom happened that the condition of business has been so generally good in all industries. This conduces to the great advantage of Heavy Hardware jobbers.

Boston.

BIGELOW & DOWSE COMPANY.—Throughout New England the ground is well covered with snow. The sleighing is fine. The temperature ranges from 12 to 20 degrees. There is plenty of ozone in the air, which gives life and energy to every one. Staple and seasonable goods are selling freely, and orders for early spring delivery were never larger. The belief in an early advance in Wire and Wire Nails encourages placing large orders. The stocks are light, and customers very generally are convinced that now is the time to buy. That old conservatism and lack of confidence is not apparent this year, as it has been in the past. All are looking for a good spring trade, and are preparing for it. The difficulty of securing Wire when wanted last year and the condition of stocks at the mills warrant the general belief that it is safe to place early orders and have early shipments that they may have the goods in store when wanted. The conditions of the iron and steel market were never better, and those who limited firm prices to be sure until midsummer are being convinced that they may remain firm through the year.

Throughout New England the mills are running full and labor is fully employed. There are no clouds in the horizon, and nothing but cheer in the future outlook.

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—This is the season when a let up in the general volume of business is expected. So far, however, no indication of this kind has appeared. Orders received from traveling salesmen and inquiries for prices on goods for present and future delivery are coming forward rapidly. Taking the year 1901 throughout it is conceded that for volume of business transactions its record shows it to have been unequaled, and the way the present year is starting out would indicate fully as satisfactory results. The latter half, of course, will depend on the quantity and quality of the crops. The general feeling throughout the territory West and East of this metropolis is one of uniform confidence, and the conviction prevails that all the present favorable conditions point to a heavy volume of business, at least until the new crop begins to attract attention. The market presents but few material changes in prices, and as long as present consumption continues no startling reductions or advances are anticipated.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—The first week of the new year started off just a little slowly, but we are pleased to report that trade has improved daily, and the volume of business now being transacted is even larger than it was during January, 1901. The salesmen in all sections of the country are securing nice orders. They are not only for unusually good quantities, but cover a general assortment of goods. There is a heavy movement in Nails, Wire, Steel Goods, Cotton Rope and Saddlery Goods; also some exceedingly nice orders for Fishing Tackle are being placed.

Collections are in good condition, and money is coming in freely.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—The year opened with seasonable weather, and although many salesmen are still at home investigating and revising prices where necessary, nevertheless there is considerable activity in trade, and this early in the season it is especially noticeable in a desire on the part of retail merchants to place their orders for many leading goods, fearing both a scarcity and an advance, and at this writing it looks as if their surmises in both instances were likely to be correct.

Wire Nails, Barbed Wire and Plain Wire.—The condition of the Barbed Wire and Wire Nail market is certainly paradoxical from the fact that we presume the sales thus far for spring delivery are in excess of any previous year for some time. We refer to the contracts entered into by the jobbing trade for stock, as well as orders placed by many of the retail merchants with jobbers. It is but natural that the American Steel & Wire Company should have the bulk of the orders of the jobbers, from the fact that they are able to supply the entire line of Wire Nails, Barbed Wire and Plain Wire which go to make up carload shipments. The consequence is that the outside makers, who are not so well prepared to furnish the entire line complete, have made it a point to advertise their lowest prices direct to the retail trade. This has naturally caused more than the ordinary competition, and the competition has become rather fierce, apparently, as between the outside manufacturers of these goods and the jobbers, but so far as we can learn the American Steel & Wire Company have not entered into the competition at all, but have proceeded in a very conservative course. This experience may not, however, extend all over the United States as it does in sections surrounding Pittsburgh, the East and the near Southern trade, so that sales have been made by the jobbers at practically about cost. Our prediction is, however, that this unwise course will reach a climax, or an end, in the very near future, as this element will not long continue in the unwise policy of changing gold dollars for silver dollars. Nor do we believe it is any part for the jobber to "buck against" the outside makers of this line of goods; that belongs to the manufacturers themselves, and it is hard enough then for jobbers to reap a fair reward at times when these conditions exist, and we predict before another issue of *The Iron Age* that conditions will have changed materially.

Poultry Netting and Wire Cloth.—The conditions of this market are equally paradoxical. It is conceded by all makers that there is no profit in these goods at the present prices. We think it is conceded by all that the sales will be quite equal to the entire product during the season, and yet there seems to be a disposition on the part of some to dispose of their goods at practically cost. We presume it is one of the unfortunate conditions of taking orders for goods in advance of the season, and the unfortunate condition of jobbers quoting against each other without knowing the full conditions and influenced considerably by the reports of both buyers and salesmen. We look for an end of the peculiar competition in this line in the near future.

Steel Goods, Forks, Hoes, &c.—Comparing prices of these goods with prices that existed one year ago, we fancy the low price in comparison is incidental to each manufacturer trying to hold all the trade he had at former prices, and fearing competitive manufacturers, they appear to have fallen over each other in the scramble to secure orders. We cannot call to mind when any similar conditions have existed on this line of goods. We think, however, the race is about run, and both manufacturers and jobbers have halted and stopped to take breath and rest.

Shovels, Spades, &c.—There appear to be no new features in this line of goods. Reports are current that one or two more of the outside makers have been bought up by the association, but there is no definite or positive confirmation of the fact. A large number of goods made outside of the association are what are known as "hol-

low back," on which the competition is still rife, but is checked by the reduced price of the association goods on the line known as "Bear" goods.

Screws.—There has sprung up since January 1 apparently a desire to sell these goods without any profit. Various reasons are given for this, some fearing manufacturers will decline in price. Upon what they base their opinion it is hard to conceive, as Wire is scarce and will be higher. The attempt to sell goods of this character before the season opens we fancy is the cause of the demoralization.

Stanley Line of Goods.—The trade were taken somewhat by surprise by an entire change in the list and discount on these goods. It confirms the opinion prevalent that many of these goods were sold practically without any profit, if not at a loss, by the manufacturers. The action taken by this company may tend to steady the market. That remains, however, to be seen.

Lawn Mowers.—Orders taken on this line of goods, as a whole, are probably in excess of those taken any previous year up to January 1. There is a disposition on the part of many jobbers to place a larger number of orders for high grade goods. This, of course, has been forced upon them by the many complaints of the cheap goods that have flooded the market the last few years, that have not given satisfaction, and many persons have begun to realize that the low priced Lawn Mowers are the highest priced in the end. To replace a Lawn Mower each year on account of the imperfection of the work is decidedly more expensive than to buy an article that will last anywhere from 5 to 15 years, which is the case with many of the high priced Lawn Mowers. The consumer, however, should not complain of an article that is bought for a price that does not guarantee a profit to the manufacturer, and in comparison with other goods is cheaper than any other line of goods we know of in Hardware.

Locks.—Most manufacturers are having an increased trade on these goods, or otherwise making less goods. We don't think that it is the latter, so it must be the former, because manufacturers appear to be far behind their orders. We fancy it is largely owing, however, to the new styles of Door Sets constantly coming upon the market, which necessitates new patterns, machinery, &c., before they are in a position to thoroughly take care of their customers.

Collections.—Collections are fair, especially for this time of the year. Possibly it is fortunate it is so, because of the large amount of funds being used in the stock market, which makes brokers large borrowers for this purpose.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—In our last we touched, in a modest way, on present and future business in the Pacific Northwest. Conclusions could only be that the future had in store for us an era of prosperity unequaled in the annals of our country. We wish the outlook in the business and financial world was of the same roseate hue that overspreads us. Often one at a distance views the situation more disinterestedly and calmly than those on the spot and in the midst of the excitement. With the depression that overhangs Germany and England, the financial interests of the world are up against conditions similar to those existing in 1892 preceding the panic of 1893. Our country, too, has been and is on the crest of a speculative wave that far overtops that of any that has led up to shipwreck in the past. The copper collapse is a forerunner of what may be expected in iron and steel, and the United States Steel Corporation, in exhibiting a balance sheet showing $84,775,000 net earnings for the past nine months demonstrate they have held products at a fictitious value that invites disaster, as did Amalgamated Copper. It behooves all to keep their houses in order during the next 18 months that they may be prepared for the worst.

Trade is holding up wonderfully in this section. In fact, it could hardly be otherwise with the thermometer at 63 and roses blooming all winter in the open. The bulge in price of wheat has induced many holders to sell, so that money is easy and collections good.

Louisville.

W. B. BELKNAP & CO.—The new year is rather young to express an opinion as to its future. It came in seemingly more as a matter of course this year than we ever knew it before. The fact is we were all pretty full of work up through the month of December, so that there was no special gathering of moral or physical forces for a fresh start on January 1. We doubt if there was as much time taken for the formation of good resolutions as usual, nor as much left for retrospection to see how well we kept those formed 12 months ago.

Business is on a good even keel, and the indications are that we shall have plenty to do for some time to come.

The reports from abroad are disturbing. The world has got so small now with its wired and wireless telegraphy and telephony that if a man takes snuff on the other side of the water we are very apt to sneeze on this. Still while we are a great nation of producers, we are also a very considerable consumer of our own wares and the most liberal buyers, we fancy, that the manufacturers have. So while we are prosperous within our own boundaries, we shall at least have something to be thankful for.

New Orleans.

A. BALDWIN & CO.—The holiday season being over business opens up in very good style, and orders are pouring in very freely for all lines of goods. Merchants are covering their full wants for spring goods, and the general situation is very satisfactory. Collections are fair.

NOTES ON PRICES.

Wire Nails.—A firmer tone is noticeable in the Wire Nail market, and extremely low prices have been the exception rather than the rule during the past week. Contracts are being entered quite freely for deliveries during January and February, while current demand for smaller lots is good for the season. It is estimated that the country will take over 2,000,000 kegs between January 1 and April 1, and the belief is expressed that it will be a question of getting Nails, rather than the price. Much interest attaches to the meeting now being held in Pittsburgh of the Wire Nail and Wire manufacturers. It was in session all day Tuesday. Action was taken agreeing upon $2 a keg as the minimum price of Wire Nails in carload lots, terms f.o.b. Pittsburgh, plus actual freight to destination. The largest interest will probably be opposed to any radical advance in price, even if it should be suggested, and the action taken has been largely to prevent demoralization in price and to strengthen the market, giving the trade confidence in its stability. With the general withdrawal of the low prices which have recently been obtainable the market is in a decidedly better state than a week or two ago. It is represented by the quotation of $2 to $2.05, f.o.b. Pittsburgh, for round lots.

New York.—The demand for Wire Nails is fairly good for small lots from store. Trade in this line does not usually show much of a revival before the middle or last of January. The market is represented by the following quotations: Small lots from store, $2.25 to $2.30; carloads on dock, $2.25.

Chicago, by Telegraph.—Manufacturers of Wire Nails report a greatly augmented demand, which has been strengthened by the stiffening of prices. Some of the independent mills are now reported to be asking 15 cents more than they were very willing to take three weeks since. It is believed that a general advance of 5 to 10 cents has been made the past week by manufacturers without any agreement with each other. They were too impatient to wait for the meeting to be held this week, finding the demand so heavy that better prices could be obtained. Large orders are being booked from all classes of buyers, the largest distributers taking in good stocks for their spring trade. The local jobbers have done an extraordinary business during the week, on which prices have been maintained at $2.15 to $2.25 for small lots and $2.10 for carloads.

St. Louis, by Telegraph.—A fair volume of business is being executed in the market for Wire Nails, and the price quoted from store is $2.25.

Pittsburgh.—At this writing a dozen or more of the leading Wire Nail concerns of the country are in session in this city for the purpose, if possible, of coming to some agreement to control prices on Wire Nails and other Wire products as well. Leading interests, such as American Steel & Wire Company, Union Steel Company, Sharon Steel Company and others are represented in person. The unsatisfactory condition of the Wire Nail market for the past three or four months has been carefully gone over and thoroughly discussed, and while it is probable an agreement of some kind will be reached, nothing definite has been given out. The sessions will likely last over Wednesday. We note a moderate demand for Wire Nails, with little change in prices. We quote at $2 a keg for good orders and $2.10 to $2.15 for small lots.

Later, by Telegraph.—The meeting of the Wire Nail and Wire manufacturers at the Hotel Lincoln, Pittsburgh, continued in session all day Tuesday until evening. The minimum price of Wire Nails was fixed at $2 a keg, in carloads; Plain Annealed Wire, $1.95; Galvanized, $2.35 per 100 pounds. These prices are f.o.b. Pittsburgh, plus actual freight to destination. Wire Nails in carloads have been selling recently at $1.95; so that the new price is an advance of $1 a ton.

Cut Nails.—The market for Cut Nails is firm, with a fairly satisfactory demand for the season. The scarcity of Steel and low price of Wire Nails is restricting the distribution of Cut Nails. General quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots	$2.05
Less than carload lots	2.10

New York.—The local Cut Nail market is quiet but steady. Representatives of mills are adhering to the price of $2.25 for Nails from store. Jobbers are asking the same price generally, but in some instances are selling 2 cents below these figures. New York quotations for carload and less than carload lots are as follows:

Carload lots on dock	$2.18
Less than carload lots on dock	2.23
From store	2.25

Chicago, by Telegraph.—A moderate trade is being done in Cut Nails at $2.30 for small lots.

St. Louis, by Telegraph.—A light volume of business for Cut Nails is being transacted, and prices are on the same basis as our last quotation. Small lots from store are quoted from $2.30 to $2.35.

Pittsburgh.—Considering the season of the year, the demand for Cut Nails is referred to as being very satisfactory. The output of the mills is being shipped about as fast as made, and there is still some difficulty in getting prompt deliveries of steel. We quote Cut Nails at $2.05 in carload lots and $2.10 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination.

Barb Wire.—The demand for Barb Wire shows improvement, with a firmer market and less irregularity in prices. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots, Painted	$2.60
To jobbers in carload lots, Galvanized	2.90
To jobbers in less than carload lots, Painted	2.65
To jobbers in less than carload lots, Galvanized	2.95
To retailers in carload lots, Painted	2.70
To retailers in carload lots, Galvanized	3.00
To retailers in less than carload lots, Painted	2.80
To retailers in less than carload lots, Galvanized	3.10

Chicago, by Telegraph.—The demand on Barb Wire factories is so heavy that the volume of business promises to be larger this year than the very heavy trade done last spring, which brought about such a condition of scarcity. The manufacturers have considerably increased their productive capacity, and hope they will be able to supply their customers with reasonable promptness. Jobbers report the movement very free, maintaining its usual proportions to the trade in Wire Nails. Small lots are quoted at $2.70 to $2.80 for Painted, and $3 to $3.10 for Galvanized with 5 cents off for carloads.

St. Louis, by Telegraph.—A firmer feeling is shown in the Barb Wire market, and a larger volume of demand and inquiry prevails. Prices are on the same basis. Jobbers quote carload lots at $2.80 for Painted, and $3.10 for Galvanized.

Pittsburgh.—Tonnage in Barb Wire is fair, and the outlook for spring trade is regarded by the mills as excellent. It is probable some agreement to control prices on Barb Wire will be reached at the meeting of the manufacturers now in session in this city. A slight advance in prices may be made. General prices are as follows: Galvanized Barb Wire, $2.90 in carload lots to jobbers, and Painted, $2.60. Terms 60 days net, 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh. On good orders these prices are shaded more or less, depending on the buyer and the tonnage.

Plain Wire.—Mills are kept busy filling current demand for Plain Wire. Consumers, including Fence makers, are placing liberal orders. Some shading of prices is reported for large and desirable orders. Regular quotations, which are, however, shaded quite freely by concessions of 10 to 20 cents, are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

Base sizes.	Plain.	Galv.
To jobbers in carload lots	$2.25	$2.65
To jobbers in less than carload lots	2.30	2.70
To retailers in carload lots	2.35	2.75
To retailers in less than carload lots	2.45	2.85

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

6 to 9	Base					$0.40	extra.
10	$0.05	advance	over	base		.40	"
11	.10	"	"	"		.40	"
12 and 12½	.15	"	"	"		.40	"
13	.25	"	"	"		.40	"
14	.35	"	"	"		.40	"
15	.45	"	"	"		.75	"
16	.55	"	"	"		.75	"
17	.70	"	"	"		1.00	"
18	.85	"	"	"		1.00	"

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

Chicago, by Telegraph.—Manufacturers are enjoying a splendid trade. The tonnage of orders now being placed is exceptionally heavy. Jobbers report a very good business and quote small lots at $2.15 to $2.25.

St. Louis, by Telegraph.—Jobbers quote No. 9 at $2.35 and Galvanized at $2.75, with the usual advance for the other sizes. It is stated that the volume of demand and inquiry is improving.

Pittsburgh.—We note a continued heavy demand, but there is no change in prices, which are more or less shaded, depending on the order. The result of the meeting of Plain Wire manufacturers, now in session in this city, is awaited by the trade with much interest.

Wire Picture Cord.—This is a line which must be bought carefully, in view of existing confusion in regard to list prices, the diversity of discounts which are current and the fact that there is more or less departure from standards in the matter of length and count of Wires. Thus a package marked 25 yards should contain 25 yards and should be properly numbered, when, in matter of fact, some Wire is put up short length and is marked up in number, as, for example, No. 2 is called No. 3, No. 3 is called No. 4, &c. These differences in the goods have something to do with the diversity of discounts which are prevailing.

German Pattern Coil and Halter Chains.—The bulk of the trade in German or German Pattern Coil and Halter Chains at present is being secured by the German manufacturers, who are quoting slightly lower prices than the American makers are doing. This situation is largely the result of a strike in the works of the American manufacturers last summer, when they were compelled to concede higher wages to their work-

men. The present depressed state of German industry has also operated to divert the trade for this product abroad. This, it is believed, however, will be only temporary.

Building Papers.—There are no changes in the market for this line of goods, prices being substantially maintained at previously published figures for Tarred Roofing, Sheathing, Slaters' Felt and Deadening Materials. Business continues good and of satisfactory volume.

Pumps.—The manufacturers regard the prices which are ruling for Pitcher Spout Pumps as being too low, in view of the condition of the iron market and the excellent demand for the goods. The matter of making an advance will probably be considered.

Tobin Bronze Rods.—Under date, January 3, the Ansonia Brass & Copper Company, New York, announce the following revised net prices of Tobin Bronze Rods:

Round Rods for Studs, Bolts, Forgings, &c., Ordinary Lengths.

⅝ inch to 3 inches diameter, both inclusive, 17c. per pound net.
Less than ⅝ inch and not less than ⅜ inch diameter, 18c. per pound net.
Less than ⅜ inch and not less than ¼ inch diameter, 20c. per pound net.
Less than ¼ inch and not less than ⅛ inch diameter, 27c. per pound net.

Pump Piston Rods and Yacht Shafting.

	⅝ inch to 2½ inches diameter, both inclusive. Pound net.	Over 2½ inches and over 5 inches diameter. Pound net.	Less than ⅝ inch and not less than ⅜ inch diameter. Pound net.
Longer than 12 inches, not longer than 120 inches..	18c.	20c.	21c.
Longer than 120 inches, not longer than 180 inches..	20c.	22c.	...
Longer than 180 inches, not longer than 216 inches..	21c.	23c.	...
Longer than 216 inches...	27c.	29c.	...

Lead Pipe, Sheet Lead, &c.—Under date 13th inst. a reduction in the price of Sheet Lead, Lead Pipe, &c., is announced by the manufacturers. Following are the present prices, which are subject to the usual discount to the trade of 20 per cent., 1 per cent. for cash in ten days being allowed and freights equalized with nearest manufacturing point:

	Per pound.
Lead Pipe	6½c.
Sheet Lead	7¼c.
Tin Lined Lead Pipe	12½c.

Copper Rivets and Burrs.—In view of the condition of the Copper market and the development of lower prices, the trade are watching closely the market for Copper and Brass Sheets, &c., but thus far there has been no further decline in these goods. A reduction, however, of about 10 per cent. has been made in the price of Copper Rivets and Burrs, of which, it is understood, manufacturers have a large stock on hand. The manufacturers are pursuing a conservative course in announcing changes of price in Copper products, and are awaiting the developments of the market for Ingot Copper, in which a stable price will probably be developed before long. Lower prices are, however, ruling for Copper Wire, bare and insulated.

Tinware.—A good deal of interest has of late been taken by the trade in the condition of the Tinware market, in which, as a result of the good understanding between the manufacturers, it has been expected that some advance in prices would be announced during the present month. This action has not yet been taken, but it is understood that a very harmonious meeting of the leading manufacturers was held in this city during the present week, as a result of which the continuation of the association is assured. Some consideration was given to action in regard to prices, but nothing definite was accomplished in this direction. The excellent relations which at present exist between the prominent manufactuers in this line give promise of regularity in prices, thus correcting a condition of things which has often characterized the Tinware business.

Cordage.—The demand for Rope has kept up remarkably well since the first of the year. Manufacturers expect this season usually to be dull, but it is proving an exception. Orders, as a rule, are for moderate quantities and are for immediate requirements. Prices are too high to make speculative buying attractive. Quotations differ with various manufacturers, as follows, on a basis of 7-16-inch and larger: Sisal Rope, 8¾ to 9¼ cents; Manila Rope, 12½ to 13 cents, with ¼ cent per pound rebate allowed on large quantities.

Glass.—The last meeting held at Muncie, Ind., by the co-operative and independent Window Glass manufacturers resulted in a majority of those outside the combination expressing their willingness to come to a price agreement with the combined factories. The Independent Glass Company have not yet signified their willingness to renew their selling agreement with the American Window Glass Company, but pressure is being brought to bear, and those interested hope that the whole matter will be satisfactorily settled this week and a trade war averted. It is to be borne in mind that the manufacturers have everything to lose and nothing to gain in the event of the market becoming further demoralized.

Paints and Colors.—*Leads.*—The market for White Lead in Oil is in an unsettled condition, owing to keen competition. Although quotations were lowered during the latter part of December, 1901, orders are being accepted by manufacturers, it is reported, at ¼ to ½ cent below current quotations, according to brand. Quotations, however, remain unchanged, as follows: In lots of 500 pounds and over, 6 cents per pound; in lots of less than 500 pounds, 6½ cents per pound.

Oils.—*Linseed Oil.*—The Flaxseed market fell off sharply the latter part of last week, but has moved up again slightly. The reaction in the seed market, together with the lack of interest shown by Oil buyers, has had a depressing effect upon Linseed Oil. Consumers appear to have their immediate requirements fairly well covered, and do not show much anxiety about the future. City Raw is quoted at 60 to 62 cents, according to quantity. These prices might be shaded for prompt delivery of small lots. Out of town Raw is held at 59 to 60 cents per gallon, according to quantity.

Spirits Turpentine.—The Turpentine market has been firm, with an advancing tendency during the week. Reports from the South indicate a strong feeling, with the probability of a reduced production in the coming crop. Local demand is comparatively light, with the market firm, according to quantity, at 40½ to 41 cents for Southerns, and 41 to 41½ cents for machine made barrels.

WISCONSIN RETAIL HARDWARE ASSOCIATION.

THE programme for the annual meeting of the Wisconsin Association has just been issued. As usual, it is in the form of a pamphlet, in which a number of advertisements appear, together with list of members, details of the convention, &c. C. A. Peck, Berlin, the energetic secretary of the association, under the heading, "A Few Words With You," refers in an introductory address to the work of the organization during the past year. He also makes the following appeal to nonmembers:

> Let me again most cordially invite you to "come with us and we will do you good." Don't wait until the meeting, but mail the secretary $2 to-day and that pays your dues until 1903.
>
> Don't try to save pennies by losing dollars. If you wait until you come into the annual meeting you may not come. Trade may keep you at home. You may feel too poor. You may have the smallpox or the baby may be teething.
>
> The one item of saving a large percentage on your fire insurance will of itself repay the item of dues many times over. Last year the membership who availed themselves of this privilege saved 35 per cent., and it looks as though they would save more this year.

The convention will be held at the Republican House, Milwaukee, on February 5 and 6. The following papers will be read at the meeting: "How to Build Up a Good Retail Business," by Fred. Kusel of Watertown; "Some of the Evils of the Trade," by F. Merbach of Ripon; "Relation of Traveling Men to Retailers," by H. L. McNamara of Janesville; "Benefits of National Union," by O. P. Schlafer of Appleton. Mr. Scofield of the Scofield Company, Sturgeon Bay, will also present a paper on a subject not announced.

EXPORT NOTES.

Business with Porto Rico has been better right along since the tariff was taken off, giving the merchants free trade with the United States. American gold is in circulation altogether and the stable character of the currency has greatly improved the situation. While Porto Rico has ceased to be foreign, there is still some diversity in the range of prices made by American manufacturers, some of which make no difference in quotations, although not putting purchases for that country on an export basis. Others have made their prices uniform with those for the domestic trade. Porto Rico's leading products for export are sugar, tobacco and coffee in the order named, sugar being greatly in excess of the others. Some of the leading staples shipped into the country in large quantities are more and more being bought of the manufacturers direct, the object being the elimination of intermediate expense.

For the following information we are indebted to the head of an export department in one of the largest American concerns manufacturing Shelf Hardware, who has recently returned from a circle of the globe which occupied nearly two years. He says Cape Town, Cape Colony, from a business standpoint is largely a retail market. There are one or two jobbing houses in Hardware, but most of the stores handling that class of goods are those of local dealers. The principal distributing points for the interior of South Africa—that is, Cape Colony, Orange River Colony, Transvaal, &c., are Port Elizabeth, East London and Durban. Fair quantities of goods go into South Africa in the way of small Hardware, Tools and similar goods, among which he noticed the manufactures of the Stanley Rule & Level Company, Henry Disston & Sons, Millers Falls Company, Stanley Works and others. In Builders' Hardware England has the trade, which is principally in Locks and door furniture. The English long wrought Lock and Rim Lock have the market.

ILLINOIS RETAIL HARDWARE DEALERS' ASSOCIATION.

As already announced, the annual meeting of the Illinois Association will be held in the commodious quarters of the Elks' Club, in Decatur, February 12 and 13. The headquarters of the association will be at the St. Nicholas Hotel. Members from Chicago and suburbs will probably travel to Decatur by special train, as the indications are that over 100 persons from that vicinity will attend the meeting. The convention promises to be a most interesting one, and a record breaking attendance is expected. Among those who will read papers are Chas. H. Williams of Streator, whose subject will be "Mental Equanimity;" ex-President Z. T. Miller of Bloomington; H. C. Peppler, 700 Lincoln avenue, Chicago; Wm. T. Gormley, 78 East Randolph street, Chicago, and L. H. Clark of Rockford.

H. S. BETTES HARDWARE COMPANY.

H. S. BETTES HARDWARE COMPANY, Paris, Texas, have issued an exceptionally attractive souvenir in honor of their twenty-fifth anniversary. It opens with a list of their exclusive agencies and then calls attention to some points in regard to their stock, orders, remittances, &c. This is followed by a short sketch of the business, which was established in the spring of 1875. It developed to such an extent that on May 1 of last year their paid up capital was increased to $125,000, and with a view of having more up to date accommodations, they erected their present three-story brick building, 65 x 220 feet, and fitted with all modern conveniences. This building, with their warehouses, gives them a total floor space of over 70,000 square feet. The company are traveling six men and cover Northeast Texas and part of the Indian Territory, Arkansas and Louisiana. The souvenir presents portraits of the president and treasurer, H. S. Bettes, and of the other officers, directors and stockholders of the company, as well as of the employees of the house. These are followed by a number of exterior and interior views of their main establishment and warehouses. A sketch of their city is also presented, together with views of its notable buildings and chief points of interest.

Letters From the Trade.

Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.

The Plural of Tailors' Goose.

The inquiry in regard to this matter which appeared in our last issue has called out a number of replies, some of which are given below. The following comes from a Baltimore house:

Referring to the inquiry in this week's issue of *The Iron Age* for the plural of Tailors' Goose, the noun used in this sense, I should think, would have no plural, so in ordering six I would suggest to word same as follows:

"Send me one Tailors' Goose, and five others just like it."

While this is a rather roundabout way to order, still it is grammatically correct.

A Birmingham, Ala., house write as follows:

Referring to your item in *The Iron Age*, issue of January 9, my opinion is that a Tailors' Goose is not a Tailors' Goose, but a Sad Iron used by tailors and branded "Tailors' Goose," consequently an order for one or more of these articles should read:

One-half dozen 'Tailors' Goose" Sad Irons.

The following is the method followed by a Conneaut, Ohio, house:

Below find proper wording for an order for one-half dozen Tailors' Goose—or what I think is proper:

Please ship at once the following order by freight, prepaid:

Tailors' Goose—

One-half dozen No. 3.
One half dozen No. 5.

This is on the principle that orders should always name article above and quantity and number below.

A Connecticut merchant submits the following:

In regard to the order for Tailors' Goose, as per *The Iron Age*, January 9, the correct wording for the same is Tailors' Smoothing Iron. This Iron has a handle in the form of a goose neck, and is used mostly by workman tailors, and as this Iron has the look of a goose, Tailors' Goose became a byword. If I were requested to order six tailors' goose or geese, I should not use the plural; would order as follows:

Please send me one Tailors' Goose and five more of the same pattern.

A merchant in Matteawan, N. Y., in ordering, would say: "Please send us a Tailors' Goose, and please duplicate it five times, in all one-half dozen." Another Hardwareman in the same State modifies this a little, and puts it: "Send me one Tailors' Goose, and six, if you have them."

From Cleveland we have the following expression, in which it will be seen that an authority is referred to:

Noting your inquiry, page 60, issue January 9, as to the plural of Tailors' Goose. Please see the Standard Dictionary. The plural given there is "Gooses," and is the only instance in which the plural for the word "Goose" is formed in this way.

G. R. Follett & Co., Newton, Kan., moved into new and larger quarters a short time since. The building is 50 x 150 feet in dimensions, two stories and basement. The store is equipped with the Warren system of shelving.

NOTES ON FOREIGN TRADE.

BRITISH LETTER.

Offices of *The Iron Age*, Hastings House, Norfolk St., London, W. C., Dec. 28, 1901.

Prices in the Brass Trade.

AMERICAN manufacturers and exporters of brass goods will be interested to learn that on December 23, at a meeting of the joint committee of the cabinet, brass founders, gas and electric light fittings manufacturers, and water, steam and beer fittings manufacturers, it was resolved "that in view of the uncertain state of the copper market no reduction in present selling prices be recommended to the trade."

Working the Architect.

I have repeatedly drawn the attention of American exporters who are concerned with building specialties to the dominating influence upon the building trade in this country of the architect. Whether it be Radiators, Metallic Roofing, Expanded Metal Laths, Sanitary Appliances or only some of the smaller items of builders' Ironmongery it is important to keep the British architect in touch with all American developments in these various lines. A gentleman who knows this trade thoroughly, and who spends most of his time soliciting architects, writes me as follows:

> As a manufacturers' agent who has had considerable experience in introducing a well-known American invention in this country for which there is now a very large demand, I can fully indorse all you said to me regarding the sale of American specialties in this country. So far as the building and engineering trades are concerned, there is undoubtedly a good opening, but specialties cannot be introduced in the same way that an ordinary commercial traveler sells goods. The demand has to be created by securing the specification of the architects and engineers, and when this is done it is a comparatively easy matter to secure the business of the builder and wholesale houses, with whom many of the smaller firms deal to secure accommodations.
>
> My object in writing is to point out the position of the manufacturer and his representative or agent, with a view to securing the better representation of American products over here. I have several American firms in mind who have started here during the last few years and are now doing excellent business, but this has only been accomplished by consistent advertising, circularizing and canvassing, and a great deal of money has been spent in this way, whereas the majority of firms who appoint agents expect them to pay cash or give bills for goods before they are sold, and, in addition to giving their services, bear the entire burden of advertising and introducing the business. Architects and engineers, as a rule, will not listen to the purely commercial man who talks from the book, but they are ready always to give a kindly ear to any one who can discuss matters with them from a technical standpoint and show them how practically to apply what they are particularly interested in. If manufacturers would support their agents a little more during the first two years, and give them their full confidence, I am sure the results will be more satisfactory.
>
> During recent years fire proof construction has come much to the front, and there is a good opening for fire resisting materials of all descriptions, Fire Alarms, Fire Extinguishing Appliances, Radiators, Warming and Ventilating Appliances, Sanitary Goods, Patent Glazing and many other lines in which American firms excel. We are conservative in adopting new ideas, but when once a manufacturer has secured a good footing he will find himself with a steadily increasing business in the hands of an energetic and capable agent who, if wise, would appoint sub-agents in the business centers throughout the country.

My correspondent is as good as his word, for he spent about two hours in this office going through *The Iron Age* library of trade literature, examining catalogues in great detail with a view of finding suitable American firms to represent. It must be clearly understood that these remarks are made by one who is mostly concerned in house construction and domestic engineering. A strong point in his favor is that he is already *persona grata* with a large number of architects, clerks of works and municipal building departments. He assures me that he is now anxious to secure American agencies in this special line.

Trade in Scotland and Ireland.

The easy steamship facilities between the Eastern States and Scotland or Ireland point to great possibilities. But how best to cultivate the Scotch and Irish trades is not so easy to answer. I have had a striking instance of this recently. In conversation with a prominent British agent, I said that I thought one agent for England, another for Scotland and another for Ireland would be the fair thing. He promptly replied that in that case he would not take the agency. "For," said he, "I have offices both in Glasgow and Dublin, and I can do the trade in both those countries as well as any local agent who may be appointed." Obviously if a really pushing, energetic and successful agent is obtained for the British Islands it is better to have it so, but both Irishmen and Scotchmen are in their own way clannish, and my own experience as a commercial traveler in both Scotland and Ireland is that, if possible, the Irish ironmonger in the rural districts should be canvassed by one of his own nationality, the same remark applying to Scotland. If, therefore, without prejudicing the English trade, good men can be obtained in Scotland and Ireland it is, I think, so much to the good, but in this, as in many other affairs, England is the predominating partner, and it is of first importance to fix up the English agency. These thoughts have been suggested to me in consequence of a visit from a young and pushing wholesale and export agent, S. Murdoch Beveridge, 44 West George street, Glasgow. Mr. Beveridge came in to examine the Hardware library last week, and in response to my inquiry informed me that he wants to take up American goods in anything suitable for house furnishing, such as Broom Handles, Washing Boards and the like, but nothing in heavy goods or machinery. Representing three large English firms in Scotland and Ireland, and with a thorough training in the ironmongery trade, there is reason to believe that this gentleman can handle agencies to advantage. His premises are large, new and imposing, and are situated in the most central and busiest part of Glasgow. He already represents large English manufacturers of Hollow Ware, Brass Goods, Pulp Ware and Enameled Ware. In addition to his Scotch and Irish trade, he is also exporting in considerable quantities to various parts of the world, his goods naturally going through the port of Glasgow. If, therefore, any American house is not yet adequately represented in Scotland and Ireland it might be well to communicate with this gentleman.

A Significant Letter.

In many of the mining settlements in West Australia Monger's Stores are well known. It is true they have not been financially very successful of recent years, but the secretary of the company has now issued a letter to the shareholders intimating that the directors have decided, as a measure of precaution, not to pay the usual interim preference dividend on January 1. I quote one paragraph in this letter:

> The trade in Western Australia was very depressed during the first half of the current year's operations, and although since the close of that half year some moderate improvement has been shown in the returns, the new federal tariff of the Australian Commonwealth presses so hard on certain Western Australian industries, and has caused so much uncertainty and hesitation in commercial circles in that colony, that it is much to be feared that the profits of the company during the whole of the present financial year will be seriously affected.

I cannot, of course, express any opinion as to the trading methods of this large company, but the words I have quoted harmonize with other opinions I have recently received from those in touch with the Australian trade. Apropos of trade to be done in Australasia, a re-

turn of the census of Queensland for 1901 shows that the total number of houses in that colony was 100,610, including 9609 tents and 263 drays. Of this total 6215 are of metal; in other words, galvanized iron. Between 3000 and 4000 were three, four and five roomed houses, and another 1800 had only one or two rooms. The total number of stone houses in the State is only 300 and of brick houses 2248. More than three-fourths of the whole, or 77,419, are of wood. One of these, the Dunwich Asylum, has 103 rooms, but the four, five and six roomed houses of wood numbered about 45,000.

Prospects in South Africa.

Week by week there is a growing accumulation upon my desk of matter relating to South Africa. I have hesitated about using it, because of the complete uncertainty existing as to the future course of the war. To what extent the Boers are prepared to continue their resistance is a question which probably they have not yet answered themselves, but the arena of military operations is, on the whole, growing more and more restricted by the blockhouse system, with the result that trade is beginning to assert itself. Thus, during the month of October, the value of merchandise imported into Cape Colony was nearly $10,000,000, compared with $8,500,000 during October, 1900. On the ten months' trading the imports of private merchandise show a total of $79,000,000, an increase of $15,000,000 compared with the corresponding ten months of 1900. The October figures show further an increase in the transit trade from Cape Colony to both the Transvaal and Rhodesia. It is thus evident that trade is on the increase. Next to the import of provisions of all kinds, metals and metal manufactures are the most important. Assuming, then, a growing restriction of the area of warfare and a gradual growth in trade, stocks of Hardwaremen will have to be replenished and, of course, Farming Implements of all sorts will be in great request. I have been favored with a list of firms who are interested in Farming Implements of all sorts. The list was made up in Cape Town on June 12 and is therefore probably accurate to-day. The names of the firms are as follows:

R. M. Ross and Co., Cape Town.
Koch & Dixie, Cape Town.
D. M. Murray & Co., Cape Town.
G. Findlay & Co., Cape Town.
J. Wiley, Cape Town.
J. Robertson & Co., Cape Town.
De Waal & Co., Cape Town.
Chubb & Maxwell, Limited, Cape Town.
Lloyds & Co., Cape Town.
Redfern, Stigant & Bensley, Cape Town.
Van der Byl & Co., Cape Town.
Warden, Foote & Co., Cape Town.
Wiener & Co., Cape Town.
Walter A. Wood & Co., Cape Town.
Mackie, Dunn & Co., Port Elizabeth.
M. M. Steytler & Co., Port Elizabeth.
Mangold Bros., Port Elizabeth.
Geard & Co., Port Elizabeth.
William Savage & Co., Port Elizabeth.
Phillips Bros., Port Elizabeth.
William E. Dickie, East London.
Griffiths & Co., East London.
Dyer & Dyer, Limited, East London.
Mallett & Co., East London.
Parker, Wood & Co., Durban.

It must not be supposed that the gold and diamond industries are the only ones in South Africa. Before the outbreak of the war the production of wool ranked first among the minor industries. In the year 1898 the value of exported wool from Cape Colony amounted to $8,500,000, while in 1899 the figure rose to $10,500,000. Natal exported wool during the same years to the value of $2,800,000 in 1898 and $3,000,000 in 1899. Then, again, ostrich feather farming is a great feature of South African life. In 1899 the total value of ostrich feathers exported from Cape Colony reached no less than $4,100,000. Other colonists again are looking to viticulture. Further north in Rhodesia two points of great importance must be noted—namely, the continued energetic construction of railways and the discovery of the Wankie coal fields. It is estimated that these coal fields possess 30,000,000 tons of good coal. This means great reduction in the cost of freightage in the near future, with consequent acceleration of trade. I have before pointed out, and I repeat, that in view of the bitter feeling existing between the Dutch and the English, there is every reason to suppose that American goods will find favor all through the Dutch districts.

FROM OUR MELBOURNE CORRESPONDENT.

General Hardware business has been fairly good during the past few weeks, although the disturbing influences of tariff decisions are still pronounced. Various duties have been altered in committee, and the Government has decided to allow no refunds where proposed duties were reduced or rejected. Traders are indignant at this decision, claiming that by the law of equity they are entitled to refunds where the proposed duties collected during the past two months are not actually sanctioned by Parliament. But Parliament has the whip hand, and Australian statesmen, the bulk of them being members of the legal fraternity, do not allow these little trifling annoyances to affect the even tenor of their way. The Federal tariff, as it now stands, and despite many concessions made in committee, is an undoubted triumph for the Protectionist party.

The Various Tariff Concessions

referred to are as follows:

GALVANIZED IRON, PLAIN AND CORRUGATED, proposed duty 15 and 30 shillings a ton respectively, to be both admitted duty free. The proposed duties were simply regarded as revenue duties, inasmuch as the manufacture is not carried on to any extent out here, and the duties would have fallen on the small country farmer and selector. There is probably no country in the world where the consumption of these lines per head of population in any degree approaches Australia. The life, lightness and portability of Galvanized Iron make it specially adaptable for use in the Australian "back blocks," in the numberless little villages distant from rail or coastal port. The trade is in the hands of the English entirely, your country never having made an attempt to get a footing in the market. Yet the annual consumption must run into large figures and make the trade worth looking after. A large proportion of the middle class cottage homes are roofed with Galvanized Corrugated Iron, since, although it is quick to heat in the rays of the sun, it is equally quick to cool off at the close of the day.

LAMPS AND LAMP WARE (except Chimneys, Shades, Globes), &c., proposed duty 20 per cent., has been reduced to 15 per cent.

LEAD, SHEET AND PIPING, proposed, 2 shillings 6 pence per hundredweight, now free.

HORSESHOE NAILS, 14 shillings per hundredweight some few years back, then 7 shillings 6 pence per hundredweight, have been further reduced to 5 shillings per hundredweight.

NAILS, WIRE, OR OTHER, BRADS AND SPIKES, formerly 7 shillings 6 pence per hundredweight, reduced to 3 shillings per hundredweight.

Apropos of these last two lines, Horseshoes and Wire Nails, the reduction of the duty will apparently give American products a better chance in the future. The duty on each is still high, when taken in conjunction with freights, and your manufacturers must bear in mind that these industries are thoroughly established here, and consequently are prepared to fight for their existence. Further, the Melbourne Hardware Association members, or at any rate some of them, are largely interested in one of the Wire Nail factories, and will take its products and regulate prices to meet competition. Still, with New York quotations for export at less than $2 per hundredweight in carload lots, you should capture all the trade of the remaining States except Victoria.

AGRICULTURAL, HORTICULTURAL AND VITICULTURAL MACHINERY AND IMPLEMENTS, PLOW MOLDBOARDS, SHARES AND PLATES are all kept at the proposed duty of 15 per cent., notwithstanding a strong attempt by the opposition to get them free listed. Australian makers, manufacturing on the spot, and in close touch with the requirements of the soil in the various districts, excel in the production of these lines, and have built up a prosperous industry in them. With all due respect for the

excellence of the Massey-Harris, the Oliver and other American makes, we hope to see this trade kept within our own doors ultimately. It cannot be done at present, as the two firms above named turn out such excellent work that they deservedly get a good name here.

ROAD MAKING MACHINERY, left, after discussion, at 15 per cent., will in the near future be an important item and a trade worth watching.

ENGINES, PORTABLE, TRACTION, AND OIL, proposed at 15 per cent., are now free listed. In the last named, Oil Engines, formerly dutiable at 30 per cent. and later at 15 per cent., there is a steady, growing demand, largely supplied by local makers. The abolition of the duty should give the imported article a better chance.

AMMUNITION—viz., Shot, Bullets and Slugs—is reduced from 7 shillings 6 pence to 5 shillings per hundredweight.

RIFLES (n.e.i.) AND SHOTGUNS, from 15 per cent. to 10 per cent.

The above about completes the list of Hardware revisions. Unfortunately, until manufacturers and traders, both here and in your country, have a larger Australian population to work upon, a noticeable expansion of trade is not to be hoped for. Australia is suffering largely, being a democratic country, from the natural democratic desire of every one to be some one. Hence, in Victoria we have a Legislative Assembly of 95 members and an Upper House of 48 to govern 1,000,000 people. Each of the five other States forming the union has its own corresponding Assembly and Upper House, and we have the Federal House and the Federal Senate over all.

Fourteen Parliaments for 4,000,000 of people, and, as a consequence, all sorts of experimental legislation to interfere with trade. When the cost of administering government is reduced by about half and the money turned into the more natural channels of trade, then we may hope for immigration and the increased prosperity which extra population must give to a country so rich in natural gifts as Australia.

AN INCREASING TRADE WITH TURKEY.

THE AMERICAN ORIENTAL AGENCY is the name of an organization started about two years ago, largely through the enterprise and activity of the Hon. Charles M. Dickinson, United States Consul-General to the Ottoman Empire, who has recently been prominent in the effort to effect the release of the American missionary, Miss Stone.

Handle American Goods Exclusively.

The agency started with the idea of making a specialty of American goods exclusively, to introduce and develop their sale in European and Asiatic Turkey and the Levant generally.

Growth of the Trade.

At first the institution occupied small quarters, only a suite of offices, but last year the business was so successful that an entire new building, one of the handsomest in Constantinople, was rented, the address of which is 1-7 Yannik Capou, Galata, which is a part of Constantinople.

Financial Strength.

The venture is really controlled by Leonidas Zarifi, one of the leading Turkish bankers. Although not taking any active part in the management of the business, he has become interested in America and American goods and is the company's financial backer.

Sultan Encourages Trade With Us

One of the most important features relating to the work of this organization is the interest which his Serene Highness, the Sultan, has taken in their enterprise of selling American goods in Turkey. Although it is not generally known, the Sultan is remarkably well posted on the current subjects of the day, and is particularly interested in the United States, being very friendly toward everything American, much of which dates from the surprises growing out of our war with Spain, our geographical position in another hemisphere also having some influence politically. In order to encourage the commercial relations which have been started, he personally is said to be a lavish patron of the American Oriental Agency, directing the buying through that source of many of the supplies required for the palace. The Sultan is represented as being especially interested in the agricultural development of the Turkish Empire, and he is doing everything possible to introduce modern American Farming Implements, Machinery, &c. The friendly feeling of the Sultan toward the United States was shown in the settlement of the Armenian claims, and confidential correspondence which comes from official circles in Constantinople indicates unmistakably that the Sultan has the feeling that sentiment in the United States should reciprocate his own friendly sentiments. Evidence of this cordial feeling on his part is shown in that department of the Government directly concerned with the importation of American goods, instructions having been given to customs officials to facilitate the entrance of American products on the most favored terms.

Comparisons to Our Credit.

One of the points in connection with American goods imported that the Sultan has been impressed with has been their reliability and uniform excellence of quality, which is all the more pronounced when contrasted with the very cheap stuff manufactured and sold in that market for our German, Italian and French competitors.

Display of American Goods.

The American Oriental Agency has very handsome and commodious showrooms for the display of American samples, and the business is conducted along American lines, special salesmen being employed for each department, who cover the territory of Turkey, both in Europe and Asia, and the Eastern Mediterranean generally. The American Oriental Agency is represented in the United States by the Strong & Trowbridge Company, 21-24 State street, New York.

DISPLAY OF AMERICAN GOODS IN ENGLAND.

ONE of the fine showrooms of American goods in England is at 124 Holborn, London, E. C. Holborn is one of the two great thoroughfares of London, which lead from the fashionable West End into the heart of the metropolis. On entering the showroom the eye of the visitor is arrested by the handsome display of Chafing Dishes and Tea Kettles. Arranged along one side are showcases containing a great variety of Mechanics Tools, Saws, Files, Hammers, Axes, Planes, Drills, &c. The right wing is devoted to Lamps and Oil Stoves. In the center of the room is a fine display of Refrigerators, Carpet Sweepers, Wringers, Washing Machines, &c. Lawn Mowers and Agricultural Tools are arranged on the other side of the building. It is the intention of the proprietors to make their showrooms headquarters in England for the display of American inventions and productions of merit.

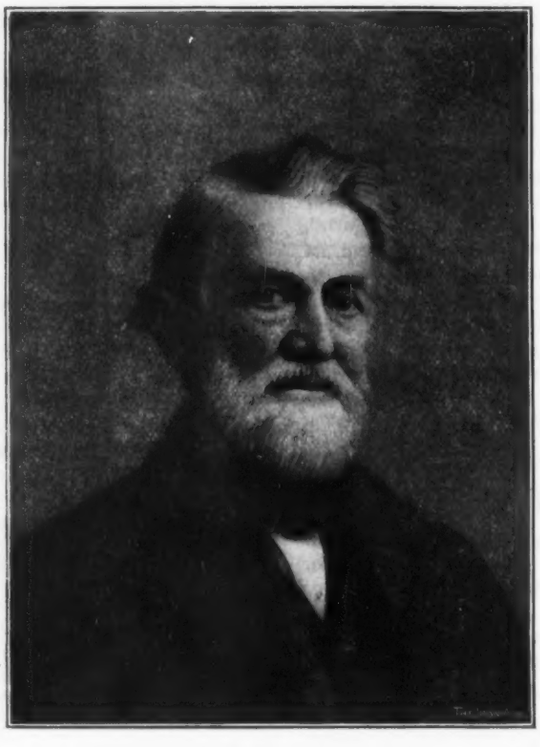
The founder of this business is John G. Rollins, a pioneer in American business in England, he establishing himself in London in 1866. In 1897 Mr. Rollins was joined by his sons, John G. Rollins, Jr., and Warren D. Rollins, and the firm's name was changed to John G. Rollins & Sons. The English business is under the management of Warren D. Rollins, who makes his residence in that country. The house are well known in the Colonies, and are shipping American goods to almost every country on the globe. The other offices are at 15-25 Whitehall street, New York, and 12 Lancelots Hey, Liverpool.

The senior member of the Hardware firm of Norwood & Field, Bellows Falls, Vt., has withdrawn from the business, and John P. Lawrence, for many years clerk and bookkeeper in the establishment, has taken his interest. The firm style is now Field & Lawrence.

DEATH OF MARCELLUS HARTLEY.

MARCELLUS HARTLEY died suddenly January 8 in the directors' room of the American Surety Company, 100 Broadway, New York, while attending a meeting of the company's Executive Committee, of which he was a member. Mr. Hartley had been chatting pleasantly only a moment before, and those about him did not suspect even a temporary illness. When he was stricken a fellow member caught him and bore him to a couch, hastily sending for physicians. Mr. Hartley opened his eyes once and tried to say something, but fell back lifeless. Death was due to heart disease, although he had not been a sufferer from trouble of that character so far as is known, but for several days had been complaining of indigestion. His health had always been excellent, and he was remarkably hale and hearty for a man in his seventy-fourth year. His favorite diversion was driving and horseback riding, and as late as the previous Saturday he went for a ride in Central Park.

Marcellus Hartley was born in New York, September 28, 1828, and was the son of the late Robert M. Hartley, himself remarkable for work among a large number of charitable institutions and movements. After being educated at one of the classical schools in New York, Marcellus entered the counting room of Francis Tomes & Sons, leading importers and dealers in Guns and Fancy Hardware. It was because of this early training in the handling of Firearms that the young man grasped that knowledge which afterward made him invaluable to the United States Government during the Civil War.



MARCELLUS HARTLEY.

After acquiring a knowledge of the business, in connection with J. Rutsen Schuyler and Malcolm Graham, associated with the house of Young, Smith & Co., Mr. Hartley established, in 1854, the firm of Schuyler, Hartley & Graham, which was in existence until the retirement of Mr. Schuyler in 1876, when the title of the house became Hartley & Graham. In December, 1899, Mr. Graham died, and the firm were then incorporated as the M. Hartley Company, of which Mr. Hartley became president.

It was early in the days of the Civil War that Mr. Hartley was commissioned by Edwin M. Stanton, Lincoln's Secretary of War, to undertake an important service for the Government. The Federal troops were greatly in need of Arms and Ammunition of modern make. The Confederates received their Arms and Ammunition from abroad, and it was necessary to send to Europe a man who thoroughly understood the business of selecting efficient weapons, and also one who would prevent the Confederates from getting the Arms which foreigners were only too anxious to sell to them. The position required tact, shrewdness and an intimate knowledge of Firearms. Mr. Hartley was selected as the agent of the Government abroad, and was commissioned a Brigadier-General with plenary power, opening for him an unlimited credit with Baring Brothers, London, the fiscal agents of the Government there.

Mr. Hartley visited manufacturers in England, France and Germany, making contracts with them for all the Arms they could manufacture in a year; at the same time the Southern agents were surreptitiously outbid, making it impossible for them to count on the foreign manufacturers so necessary to their cause. Throughout his service during the war many millions of dollars' worth of purchases were made for the Government by Brigadier-General Hartley, who, at great pecuniary sacrifice to himself, accepted the post, receiving only the salary of his rank.

On his return home to New York, in 1863, Mr. Hartley published, at his own expense, a pamphlet on the "Philanthropic Results of the War," which he caused to be gratuitously circulated abroad.

Mr. Hartley married Miss Frances Chester White, daughter of the late Dr. S. Pomeroy White of this city. They had four children, but only one, a daughter, the wife of George W. Jenkins, president of the American Deposit & Loan Company, survives.

Mr. Hartley was too much occupied with his business to be drawn into politics, beyond taking the interest therein expected of every good citizen.

By great sagacity and close attention to business, and by his earnestness and an indomitable will, Mr. Hartley added to his commercial interests in the course of time, until he became identified as president, director or trustees with many well-known corporations. He was president and director of the M. Hartley Company, Remington Arms Company, Bridgeport Gun Implement Company and president, treasurer and director of the Union Metallic Cartridge Company. Among some of the other large business organizations with which he was prominently connected may be mentioned the American Deposit & Loan Company, American District Telegraph Company, American Surety Company, Audit Company of New York, Equitable Life Assurance Company, Fifth Avenue Trust Company, German-American Bank, Lincoln National Bank, Manhattan Railway Company, Mercantile Trust Company, American Ordnance Company, Western National Bank and Westinghouse Electric Mfg. Company. The latest great enterprise with which Mr. Hartley was identified was in the organization of the International Bank, of which he was president.

Despite Mr. Hartley's numerous business interests, he devoted much time to many charitable institutions, particularly the Hartley House, organized under the auspices of the New York Association for the Improvement of the Condition of the Poor, and named after the father of the deceased financier. Among the other charitable institutions fostered by Mr. Hartley, all of which owed their existence in part to the work of a member of the Hartley family, are the Society for the Relief of Ruptured and Crippled Children, the Presbyterian Hospital and the Association for the Improvement of the Condition of the Poor.

Mr. Hartley was a member of many clubs and societies, both social and scientific. He was one of the early

members of the Union League Club, and for more than 30 years was a stanch supporter of that organization. He was also a member of the Lawyers' Club and a patron of the American Museum of Natural History and the Metropolitan Museum of Art; he also belonged to the American Fine Art Society, Presbyterian Union, New England Society, Republican Club and Essex County Club of Orange, N. J.

Mr. Hartley traced his origin to some of the best blood in England. The family of Hartley is of great antiquity in Yorkshire, and there are also distinguished representatives in Dorset, Berkshire and Cumberland.

Speaking of Mr. Hartley, Russell Sage, the banker, said: "He was one of the few men of great financial influence in this city, I might say in this country. He was remarkable for his conservatism; he was a man who desired above all things to be regarded by the public from the background in any enterprise with which he was connected. His honesty and integrity, as far as I have any knowledge, were never questioned, and any one associated with him, either in a social or business way, had the deepest affection for him." John A. McCall, president of the New York Life Insurance Company, said: "I have been associated for many years with Mr. Hartley in the Equitable and other enterprises. He always showed perspicacity and excellent judgment. In fact, when I was associated with him in many projects of mutual interest I was always sure to get from him a careful and conservative expression of opinion. He was very safe as an adviser, and a very devoted and loyal friend."

At the funeral services, either as pallbearers or friends, were many of the best known men in New York and other cities in financial and other great business and professional enterprises.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

The Wade Hardware Company are expecting to open up in the general Hardware and Farm Implement business at Dunn, N. C., about February 1. They will be pleased to have catalogues, quotations, &c., pertaining to these lines.

Crutchfield Hardware Company, Greensboro, N. C., have had their charter amended and the name changed to Southside Hardware Company. They have increased their capital stock and have moved into a new storeroom, 25 x 100 feet, with warehouse, 25 x 50 feet, in rear. The company handle Builders' Hardware, Carpenters' Tools, Farm Implements and Paints and will value copies of catalogues and price-lists relating to these lines.

E. D. Goodwin has just opened a store at Hartford, Mich., and will handle Hardware, Agricultural Implements, Buggies, Wagons and Well goods. He will also have a department devoted to tinning, plumbing and roofing. He will be pleased to receive catalogues, quotations, &c.

Williamson & Donbar, Hardware merchants, New Waterford, Ohio, advise us that they would be pleased to receive printed matter and prices from manufacturers of Lamps, any kind of light. They state that the gas in their section of the country has been exhausted, and as they are building a new storeroom, 22 x 100, feet, two stories, it will be necessary for them to have considerable artificial light.

Maurice Walton Hardware Company, Augusta, Ga., have just opened a branch house at Columbia, S. C., and request manufacturers of General Hardware, Tools, Agricultural Implements, Hardware Specialties, &c., to send copies of catalogues and discount sheets to the new store.

Spicer Mfg. Company, New Philadelphia, Ohio, advise us that their offices were destroyed by fire on the 9th inst. Among other matter consumed was their collection of catalogues. The company state that they are anxious to replace these, and they will accordingly value copies of new catalogues from all the concerns with whom they have ever done business, or from whom catalogues have ever been received.

THE CHAPIN-STEPHENS COMPANY.

THE CHAPIN-STEPHENS COMPANY, Pine Meadow, Conn., have just issued a new catalogue and price-list relating to their line of manufactures, which comprise Boxwood and Ivory Rules, Plumbs and Levels, Planes, Gauges, Hand Screws, Box Scrapers, Spoke Shaves, Chisel and Saw Handles, File and Awl Handles, Plane Irons, Door Stops, Turning Saw Frames and Saws, &c. It is accompanied by a folder giving the Rule numbers of the Chapin-Stephens Company as compared with the former numbers of the H. Chapin's Son Company and Stephens & Co., whose interests have been consolidated in the Chapin-Stephens Company. It will thus be observed that the former H. Chapin's Son Company's numbers and Stephens' numbers have been given up, and the old or original H. Chapin numbers used by the founder of the business at Pine Meadow adopted in their stead. These numbers being also the numbers used by other Rule manufacturers, all Rules of a given style made by different concerns are now known by the same catalogue number. The company advise us that they are now busy on their whole line and are rapidly adjusting the machinery of the two former plants to the requirements of the new concern, thus putting themselves in a position to turn out their goods rapidly and take care of their patrons with satisfactory promptness.

BUCK BROTHERS.

BUCK BROTHERS, Riverlin Works, Millbury, Mass., whose trade-mark is the Buck's Head, inform us that their sales for the past year were far in excess of any previous year. This firm lack but one year of rounding out half a century of continuous business, the original founders coming from Sheffield, England, from which place Buck Brothers still continue to import steel for use in the manufacture of their Tools. Three different departments of the United States Government have been supplied with their product during the past year. The same rigid inspection of Tools and a constant supervision of all the details of manufacture is still relied upon to turn out the best quality of goods in their line, comprising Firmer and Socket Chisels and Gouges, Turning Tools, Carving Tools and a large variety of Light Edge Tools and Razors. Buck Brothers have enlarged their manufacturing facilities during the past year, the forging department being increased fully 50 per cent. The prospect for the future is regarded as very good, the firm at present being well supplied with orders.

SLIGO IRON STORE COMPANY.

THE SLIGO IRON STORE COMPANY, St. Louis, Mo., have just taken possession of the new and large addition adjoining their old building, giving them just double the amount of space heretofore occupied. The frontage of their establishment is now 120 feet by about 190 feet in depth, and the buildings are four stories high. This affords ample room for a fine display of their large stock of goods, consisting of Heavy Hardware and Carriage Materials of all descriptions. A complete Paint department is a new feature. The new building is admirably arranged and visitors are impressed with the way in which all the requirements of the business are provided for.

Soper & Reid have succeeded R. J. Soper in the Hardware, Stove, Tinware and grain and seed business in Lebo, Kan.

TABLE OF PRICES OF HORSESHOES.

THE following table giving the prices of Horseshoes, showing the advance to which we called attention in our last issue, is issued by James A. Coe & Co., Newark, N. J. We reproduce it here as containing much information in a clear and accessible form, which will be of service to the trade:

NEWARK, N. J., January 3, 1902.

Withdrawing all former quotations on the

American, Phoenix and Perkins Horseshoes,

we now quote following prices, subject to change without notice:

AMERICAN, PHŒNIX AND PERKINS

Iron Horseshoes.

Extra Light, Light, Medium, Heavy, Long Heel, Iron Countersunk.

Snow and Mule Shoes, No. 2 and larger, $3.60 per keg base.
Tips, No. 2 and larger, 50c. per keg advance over iron base.
Nos. 0 and 00 Mule Shoes, $1.50 per keg advance over iron base.
Jack Shoes, $2.50 per keg advance over iron base.

PHŒNIX AND PERKINS

Iron Shoes.

Calked Shoes, No. 2 and larger, 75c. per keg advance over iron base.
Calked Mule Shoes, No. 1 and larger, $1.25 per keg advance over iron base.

PERKINS.

Goodenough Army and Heavy Shoes, No. 2 and larger, 50c. per keg advance over iron base.
Goodenough Winter Shoes, No. 2 and larger, $1 per keg advance over iron base.

AMERICAN, PHŒNIX AND PERKINS

Steel Horseshoes.

Light and Extra Light, No. 2 and larger, $3.35 per keg base.
X. L. Steel Shoes, No. 2 and larger, 75c. per keg advance over steel base.
Thin Steel Countersunk, No. 2 and larger, $1 per keg advance over steel base.
Cow Boy Shoes, No. 2 and larger, $1.25 per keg advance over steel base.
Plain Cow Boy Shoes, No. 2 and larger, 75c. per keg advance over steel base.

PERKINS.

Toe Weight Shoes, No. 2 and larger, $5.10 per keg, f.o.b. Pittsburgh
Side Weight Shoes, No. 2 and larger, $7 per keg, f.o.b. Pittsburgh.

NOTE.—All Horse and Mule Shoes No. 1 and smaller, 25c. per keg extra. Smallest factory shipments, 10-keg lots.

All shipments from Newark, N. J., f.o.b. cars, any quantity:
Iron Horseshoes.....$3.76 per keg base.
Steel Horseshoes..... 3.51 per keg base.

NOTICE.—Factory shipments are to be billed as if f.o.b. Pittsburgh, and prices to you would be with additional charge for C. L. or L. C. L. freight from Pittsburgh to your depot, freight being prepaid by shipper, making prices at your depot in L. C. L. lots:

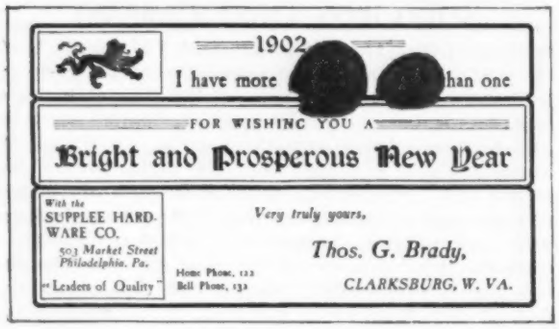
Iron Horseshoes, $ per keg base.
Steel Horseshoes, 25c. per keg base less than Iron Shoes.

We offer you a special rebate of c. per keg, which we will deduct from above prices on each invoice.

Terms, 30 days net, or less 2 per cent. for cash if remitted within ten days from date of invoice.

"RAYSONS" AND RAISINS.

THE ingenious New Year's Greeting here reproduced is the conception, it is safe to assume, of a true son of the Emerald Isle, although his "raysons," which



"Raysons" and Raisins.

are the real thing, were doubtless put up in 22-pound boxes in Malaga. The raisins are held in their place on the 3½ x 6 inch card, which is printed in two colors, by a little adhesive. What this enterprising traveling salesman is seeking to accomplish in this unique New Year's Greeting is to impress on the buyers of the houses upon whom he calls that he is still in the field and ready to aid them in making 1902 a prosperous year.

LOGAN-GREGG HARDWARE COMPANY.

THE annual banquet tendered to the employees of the Logan-Gregg Hardware Company, Pittsburgh, took place last week. Covers were laid for 80, and the guests included all the employees of the company. During the evening addresses were made by George B. Logan, P. L. Logan, W. H. Park and others. There was also an impromptu musical programme, and a very pleasant evening was spent by those present.

WALTER W. WOODRUFF & SONS COMPANY.

THE WALTER W. WOODRUFF & SONS COMPANY, Mount Carmel, Conn., have just issued their 1902 catalogue, 144 pages, of Coach and Carriage Mountings, Hardware and Specialties. They call attention to the fact that since their last edition, issued in 1898, they have added the line of High Grade Malleables and Specialties formerly made by F. V. Wooster of Boston, and also many new styles and sizes of Mountings and Hardware.

AMONG THE HARDWARE TRADE.

A. Menning, Hardware and Farm Implement merchant, formerly located at Afton, Iowa, has removed to Archer, in the same State.

J. W. Emerson has succeeded the Agricultural, Implement, Wagon and Buggy firm of Emerson & Welch, at Cedar Rapids, Iowa.

Rouse & Byram, Abingdon, Ill., have been succeeded by Main & Byram, who will continue the sale of Shelf Hardware, Stoves, Tinware and Farming Implements.

Maupin Bros. are carrying on the Hardware, Stove and Farm Implement business formerly conducted by C. C. Maupin, Calhoun, Mo.

Anderson & Shook are successors to Anderson & Appleby in the Hardware, Harness, Agricultural Implement and furniture business in Hamilton, Kan.

A. L. Tuttle, Berwick, Maine, has moved his Hardware, Stove and House Furnishing Goods business to new and more commodious quarters.

C. F. Luthy, Millersburg, Ohio, has disposed of his stock of Hardware, Stoves and Agricultural Implements to Lemon, Kreiger & Miller, who took possession on the 7th inst. Mr. Luthy has been engaged continuously in the Hardware business for 35 years with the exception of the period 1898-1900, during which time he was identified with the wholesale notion house of the Stuber, Luthy & Gregg Company. Mr. Luthy has not yet decided what business he will take up, but has several things in prospect.

H. J. Haskard has purchased the Hardware and Harness business at Partridge, Kan., formerly conducted by C. C. Stallman, and will continue it at the former stand.

THE LALANCE & GROSJEAN MFG. COMPANY, New York, have placed an order in Philadelphia for a complete galvanizing outfit for their factory at Woodhaven, LA I. The plant will be used for the manufacture of Galvanized Ware, a line that the company have not heretofore produced. The new plant will be ready for operation in about six weeks' time.

TRADE ITEMS.

HILL & MORGAN are manufacturers' agents for Machinery, Hardware and Builders' Supplies, 309 South Sharp street, Baltimore, Md. Among the concerns for whom they are acting as direct representatives are Boston Blower Company, Simplex Time Recorder Company, Wilson Laundry Machinery Company, International Pancoast Ventilator Company and Rubber Tire Company.

FRED. H. COZZENS, who until recently has been acting as secretary of the Michigan Retail Hardware Dealers' Association, formally resigned his position at a meeting of the Executive Committee at Detroit on the 14th inst., and will hereafter devote his entire time to the interests of the United States Company, manufacturers and jobbers of Hardware, 13-21 Park row, New York. Mr. Cozzens has been residing in New York since early in the fall, and has not given any attention to Hardware association work since he came East.

STANLEY WORKS, 79 Chambers street, New York, are selling representatives of the Hart & Cooley Company, New Britain, Conn., manufacturers of lines of Wrought Steel Registers and Ventilators, recently put on the market. These Registers, which are in an Indian lattice design, are made of stamped steel in japan, nickel plated and white enamel finishes regularly, or the surface can be finished in any style desired to harmonize with the interior. The same styles are made in all the regular sizes from 6 x 8 inches up. The Stanley Works will cover all the territory on this product that they cover on their own goods.

CHARLES E. SHELDON, vice-president and general manager of the Whitman & Barnes Mfg. Company, Akron, Ohio, has just returned by the steamer "St. Louis" from a combined business and pleasure trip to their London branch, 149 Queen Victoria street. He went over December 1.

UNDER date of December 31 Keuffel & Esser Company, 127 Fulton street, New York, issue a circular, in which they state that while they have tried hard to keep pace with the increased demands made on them, some disappointments in the way of prompt deliveries were unavoidable, as the enlarged demand for their goods, together with the interruptions in manufacturing due to the distribution of their plant into additional new buildings, which double the size of their former factory at Hoboken, N. J., had temporarily overtaxed their facilities. Now all their departments have been removed into new quarters and everything is in running order, so that the opening of the new year finds the company in very much improved condition to meet all demands.

IN a trade item in our issue, January 9, reference was made to Allerton-Clarke Company, 97 Chambers street, New York, as the general selling agents for E. T. Fraim, proprietor of the Keystone Lock Works, Lancaster, Pa., who last fall bought out the Union Lock & Hardware Company of the same city. While Allerton-Clarke Company still sell the products formerly made by the Union Lock & Hardware Company, Alder & Boyd, 37 Warren street, New York, continue to be, as heretofore, the selling agents for the various lines made by the Keystone Lock Works.

CALENDARS, &c.

GRAND RAPIDS REFRIGERATOR COMPANY, Grand Rapids, Mich.: Calendar, copy of which they will be pleased to send to any one on application.

SAMSON CORDAGE WORKS, Boston, Mass.: A desk calendar in the interest of their Samson Spot Cord.

CHARLES WARNER COMPANY, Wilmington, Del.: Memorandum book issued in the interest of Nazareth Portland Cement, Cedar Hollow Lime, &c.

KEUFFEL & ESSER COMPANY, 127 Fulton street, New York: A celluloid calendar calling attention to their line of Surveying Instruments and Drawing Materials.

BRUCE & COOK, 190 Water street, New York, dealers in Tin Plates and Metals: Their twenty-eighth annual calendar, covering the ninetieth year of their business career.

J. J. GERRISH & Co., Railroad, Steamboat, Engine and Mill Supplies, Portland, Maine, issue a card which purports to be an "annual pass for good luck over many bright days of happiness and pleasure." It is referred to as good every day in the year the wide world over.

WM. M. CRANE COMPANY, 1131 and 1133 Broadway, New York, manufacturers of Gas Appliances: Desk calendar in leather frame.

STANLEY WORKS, New Britain, Conn., and 79 Chambers street, New York: Calendar in the interest of their Ball Bearing Hinge and enforcing its merits.

PRICE-LISTS, CIRCULARS, &c.

BLAIR MFG. COMPANY, Springfield, Mass.: Catalogue containing well executed illustrations of their line of Lawn Mowers. The engravings have been prepared from large photographs and give an excellent idea of the construction of the machines. The line of Mowers embraces the Easy, the "Cyclemower," Majestic, Hercules, Bay State, Victor, Mohawk and Universal.

B. F. AVERY & SONS, Louisville, Ky.: Illustrated catalogue and price-list of nearly 200 pages, devoted to their Cast, Steel and Chilled Plows, Planters, Cultivators and Harrows. They advise us that they are making a specialty of Sulky and Gang Plows, Disc Plows and Cultivators, Stalk Cutters, Riding and Walking Cultivators, Blackland Plows and Sugar Implements, in addition to their regular line.

NICOL & Co., 55 and 57 West Washington street, Chicago: Catalogue of Light Hardware and House Furnishing Goods. These goods comprise such articles as Lemon Squeezers, Ice Picks and Shavers, Can Openers, Boot Jacks, Nut Cracks, Curling Irons and Toys, comprising Puzzle Savings Banks, &c. The firm are manufacturers of a great variety of novelties.

FARWELL, OZMUN, KIRK & Co., St. Paul, Minn.: Catalogue, 80 large pages, of Bicycle Sundries, Parts, &c.

RIPPLEY HARDWARE COMPANY, Grafton, Ill.: Catalogue, 64 pages, illustrating and describing the company's line of Feed Cookers, Sprayers, Whitewashing Machines, Steel Tanks, and Fancy Poultry, Cattle and Sheep Breeders' Supplies.

W. C. TOLES & Co., Irving Park, Chicago, Ill.: Catalogue illustrating and describing the W. C. Toles Rapid Acting Vises for wood workers, and also their new line for iron workers. It also shows their Nos. 1 and 2 Manual Training Benches and No. 3 Double Manual Training Bench. These Benches were designed by parties prominently connected with Chicago manual training institutions.

ROLLMAN MFG. COMPANY, Mount Joy, Pa.: Postal circular calling attention to the merits of their Rollman Cherry Seeder, which is referred to as a practical machine for seeding large, small or California cherries.

CHARLES C. STELLE, 81 Fifth avenue, Brooklyn, N. Y.: Circular describing Post's Improved Eureka Sap Spouts with patent air trap, of which he is manufacturer.

MERIDEN BRITANNIA COMPANY, International Silver Company, Successors, Meriden, Conn.: Pamphlet giving a few selections from their advertisement cuts which are now appearing in magazines and other periodicals. Any of the cuts shown in the folder will be loaned to dealers on application.

ARCHER IRON WORKS, 36 La Salle street, Chicago: Catalogue showing their line of all steel Wheelbarrows, Lumber Carts, Steel Ore and Coal Carts and Trucks and Wheels of all kinds. The company are also manufacturers of Ornamental and Structural Iron Work.

REEVES IDEAL MFG. COMPANY, Saginaw, Mich.: Circulars illustrating and describing the Reeves Ideal Cushion Post for autocycles and bicycles.

HARDING EDGE TOOL WORKS, Geo. M. Rubinow, proprietor, Newark, N. J.: Catalogue and price-list show-

ing their Shingling, Claw, Half and Lathing Hatchets, Hunters' and Boys' Handled Axes and Yankee Pattern Axes.

LE PAGE DOOR CHECK MFG. COMPANY, Toronto, Ont.: Illustrated and descriptive price-list of Le Page's Oil Door Check and Spring.

DUMONT TOOL COMPANY, 47 Jewett Building, Buffalo, N. Y.: Circular describing improvement which they have made in their patent Corner Brace.

MISCELLANEOUS NOTES.

Roof Cement and Paint.

Stowell Mfg. Company, 114 to 134 Culver avenue, Jersey City, N. J., are manufacturing two roof specialties in addition to their lines of prepared roofings, among which are gravel, cork and asbestos covered roofings, in addition to the plain asphaltum felts. One of the specialties is an elastic rubber roof cement, guaranteed by the manufacturers not to crack or become brittle, and designed particularly for repairing leaks in roofs, around chimneys, skylights, dormer windows, copings, gutters and elsewhere. It can also be used for securely fastening loose or broken slate, bedding and tiles. Another commodity of similar character is black asphalt roof paint, for use on tin and iron roofs, bridges, gas tanks and underground pipes. It is said that tin roofs, even when rusted, broken and leaking, can be rendered water tight and serviceable with this preparation. It will withstand extreme heat or severe cold. It is easily applied and always ready for use.

Shotgun Shells.

The line of shotgun shells made by the Peters Cartridge Company, Cincinnati, Ohio, have until recently been loaded exclusively with King's powder, smokeless, semi-smokeless and black. For some time past this company have been experimenting with a view of adapting their smokeless powder shells to the various makes of smokeless powder on the market. It is now announced that after exhaustive tests the company are ready to supply Peters' Ideal and New Victor shells loaded with either King's, Du Pont, Hazard, E. C. or Schultze smokeless powders. These loads are now on the market. In addition to adapting these shells to the foregoing powders, all of which are bulk for bulk type, the Peters Company, we are advised, are perfecting a high base shell, which is nearly ready for the market and which will be suitable for the various types of dense smokeless powder. It is the aim of this company to complete their line of shotgun shells suitable for all makes of smokeless powders of both bulk and dense type.

Sheet Steel Tool Boxes.

The W. J. Clark Company, Salem, Ohio, are putting on the market a line of sheet steel tool boxes, one of

Sheet Steel Tool Boxes.

which is shown in the accompanying cut. The boxes are adapted to the needs of boiler makers, stone masons, iron bridge workmen, &c. The boxes are provided with a hinged lid, hasp and staple for locking with padlock, and handles riveted to the ends of the box.

The Utility Lamp Bracket.

The accompanying cut shows a lamp bracket offered by the Utility Mfg. Company, 16 S. Frederick street, Baltimore, Md. The bracket is provided with a reflector, and is made to fit regular glass founts. It is

The Utility Lamp Bracket.

japanned a glossy black, and is referred to as being strong and neat. The brackets are packed one gross in a case.

The Illinois Roach Trap.

The patent roach trap, herewith illustrated, has recently been placed on the market by J. H. Jones, Streator, Ill. Fig. 1 shows the trap ready for use and Fig. 2 presents a view with the top removed. In form

Fig. 1.—The Illinois Roach Trap.

the trap resembles a 2 quart bucket with wire gauze inserted in the lid. The construction is as follows: The bottom is double, thus permitting an opening to be arranged all around the bottom edge, through which the

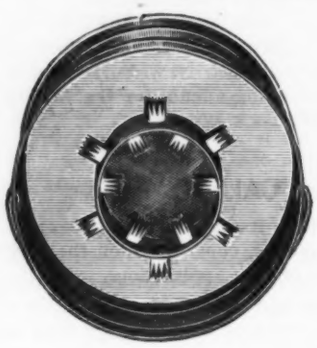


Fig. 2.—Illinois Roach Trap, with Top Removed.

roaches can freely pass into a circular compartment in the center. This compartment has a wire gauze bottom, below which the bait is placed in a tin cup or lid, fitting on the tin wall of the compartment. The roaches are

thus unable to get at the bait and cannot return through the openings by which they entered, as these are guarded by sharp prongs. Above the prongs are openings permitting the roaches to pass from the compartment into the top of the trap. They are again unable to escape from this second compartment, as sharp prongs are also placed around the openings through which they entered. When a number of roaches are caught in the trap they are killed by immersing the trap in water. After the first baiting is done the trap requires no setting or further attention. It is simple in form and is very easily cleaned. The manufacturer states that in more than one instance a single trap has caught more than a quart of roaches in one night. The trap is made of either tin or galvanized iron, as desired.

Features of the Peerless Refrigerators.

The Wisconsin Refrigerator Company, Eau Claire, Wis., have introduced a number of special features in their Peerless line of refrigerators, which are herewith illustrated. Fig. 1 shows a refrigerator with the door to the provision chamber open, to enable the arrangement of the interior to be seen. Fig. 2 illustrates the new drain pipe and drip cup. The drain pipe and drip cup are removable for cleaning, by raising the cup enough to release it from the lower pipe and giving the cup a half turn to the left. The upper and lower pipes can then be easily removed. The cup is circular in shape and is constructed so as to form a trap. It fills with

Fig. 1.—Peerless Refrigerator.

the drainings from the ice and overflows into the downward pipe, thus preventing the possibility of cold air escaping from the ice chamber or warm air entering from the outside of the refrigerator. The cup has a glass front, which enables the interior to be easily inspected, so that any collection of refuse can be detected which might clog the pipe and cause water to overflow into the provision chamber. Fig. 3 shows the improved ice rack, which is made entirely of metal and braced and riveted in such a manner as to give the greatest possible strength. The arched shed under the center of the rack, covering the opening directly entering the provision chamber, is constructed so as to prevent the drippings from condensation passing into the provision chamber, and its open construction to give the quickest possible circulation of dry air to the food in the provision chamber below. Fig. 4 shows the new cleanable

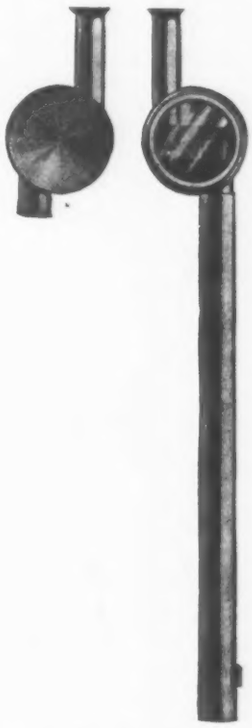


Fig. 2.—Drain Pipe and Drip Cup.

flue wall. This is a flue within a flue. The square hollow device attached to the center and inner side of the wall is a reinforcement to the wall, giving great strength,

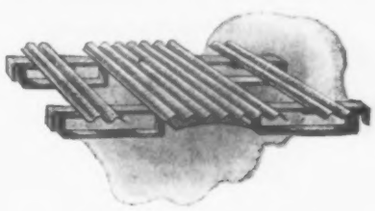


Fig. 3.—Improved Ice Rack.

and acts as a second draft, greatly aiding in the rapidity of the circulation. The upper edge of the wall is shaped inward and extends over proper points at the top, holding it in its final position. The bottom of the wall is shaped so as to carry off all condensation direct to the drain pipe.

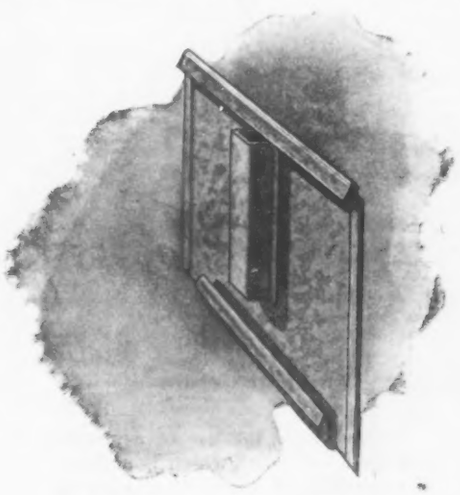


Fig. 4.—New Cleanable Flue Wall.

Brass Bucket Spraying Pump, Fig. 254.

The accompanying cut represents a brass bucket spraying pump, Fig. 254, with malleable iron foot rest, offered by the Barnes Mfg. Company, Mansfield, Ohio. The pump is made of brass tubing without threads on either end, being held firmly together by a galvanized steel rod connected at the top and bottom parts, to make it perfectly tight. By removing the brass hexagon nut at the top of the rod the pump can be taken entirely

Brass Bucket Spraying Pump, Fig. 254.

apart, should it be necessary to repair or clean it. The manufacturers refer to the advantages in taking this pump apart, over pumps made of brazed tubing, with threads cut on the ends, to be screwed into the top and bottom castings. Another pump, catalogued Fig. 255, is the same as the one here described, except that it has a bucket clamp instead of the foot rest.

The Newire Corkscrew.

The Rockwell Clough Company, Alton, N. H., are putting on the market a corkscrew, as shown in the accompanying illustration. A novel feature of the cork-

The Newire Corkscrew.

screw, it is remarked, is the use of a shoulder placed at a distance from the point which is sufficiently great to allow the drawing of the longest cork and at the same time prevent the screw sinking into the cork up to the handle. The tool is made of strong wire and has a wood handle firmly attached. The manufacturers state that the style of corkscrew shown represents the maximum of utility at a cost of one-half that of the poorest article of the kind imported.

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Current Hardware Prices.

REVISED JANUARY 14, 1902.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓@33⅓&10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Cut Prices.—*In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.*

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 4, 1901), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, ₩ doz. $3.00....33⅓@33⅓&10%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent.....25&5%
Taplin's Perfection.....50%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Armand Hammer, Wrought ₩ lb 8¼@8¾¢
Buel Patent Trenton.....₩ lb 9¼@9¾¢
Eagle Anvils.....₩ lb 7¾@7¾¢
Hay-Budden, Wrought.....9@9¼¢
Horseshoe brand, Wrought.....9@9¼¢

Imported—

Peter Wright's.....9½@9¾¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....20%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Hull Bros. Co.:
Lots of 1 doz.....25%
Smaller Lots.....20%
Lots of 3 doz.....30%

Augers and Bits—

Com. Double Spur.....70@70&10%
Boring Machine Augers.....60&10&10@70&10%
Car Bits, 12-in. twist.....60@60&10%
Jennings' Pattern Auger Bits.....50&10&5@60%
Ford's Auger and Car Bits.....40&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings 'list....40%
No. 30. R. Jennings' List.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits 15&10@15&10&5%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....50&10%
Snell's Car Bits, 12-in. twist.....60%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

Standard List.....65@65&5%

Expansive Bits—

Clark's small, $18; large, $26.....50&10%
Lavigne's Clark's Pattern, No. 1, ₩ doz., $26; No. 2, $18.....50&10%
C. E. Jennings & Co., Steer's Pat.....33⅓%
Swan's.....60%

Gimlet Bits—

Common Double Cut..gro. $2.25@2.75
German Pattern.....gro. $3.25@4.50

Hollow Augers—

Bonney Pattern, per doz. $11.00@11.50
Ames.....25&10%
New Patent.....25&10%
Universal.....30%
Wood's Universal.....25%

Ship Augers and Bits—

Ford's.....40%
Snell's.....40%
C. E. Jennings & Co.:
L'Hommedieu's.....15&13%
Watrous'.....40%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled.....gro. $2.75@3.10
Unhandled, Shouldered..gro.63@66c
Unhandled, Patent.....gro. 66@70c
Peg Awls:
Unhandled, Patent....gro. $1@1.1c
Unhandled, Shouldered..gro.65@70c
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First Quality, best brands $5.50@5.75
First Quality, other brands 5.25@5.50
Jobbers' Special Brands:
Good Quality.....$4.50@4.75
Best Quality.....$5.00@5.25
Cheap, Handled Axes.....$5.50@5.75
Beveled, add 25c doz.

Axle Grease—See *Grease, Axle.*

Axles—

Iron or Steel.
Concord, Loose Collar.....4½@5c
Concord, Solid Collar.....5½@5½c
No. 1 Common.....3¼@3¾c
No. 1½ Com. New Style..3½@4 c
No. 2, Solid Collar.....4¼@4½c
Nos. 11 to 14.....70@70&10%
Nos. 15 to 18.....75@75&10%
Nos. 19 to 22.....75@75&10%

5% cash 10 days.

Boxes, Axle—

Common and Concord, not turned.. lb. 4½@4¾c
Common and Concord, turned.. lb. 4¾@5c
Half Patent.....lb. 5@9c

Balances—Sash—

Caldwell new list.....50%
Pullman's.....60%

Spring—

Spring Balances ... 50&10@50&10&5%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%
Peinze.....50%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb.. 2¾@3c

Beams, Scale—

Scale Beams, List Jan. 12, '81.40&10%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters—Egg—

Standard Co.:	₩ gro.
No. 0 Rapid	$4.50
No. 10 Dover Family Size	$6.5
No. 15 Dover Hotel Size	$12.00
Rival	$9.00

Taplin Mfg. Co.:	₩ gro.
No. 60 Improved Dover	$6.50
No. 75 Improved Dover	$7.50
No. 75-2 Imp'd Dover, Tin'd	$9.00
No. 100 improved Dover	$8.00
No. 102 Improved Dover, Tin'd	$9 50
No. 150 Improved Dover, Hotel	$15.00
No. 152 Imp'd Dover, Hotel, T'd	$17.00
Lyon's, Standard size	₩ doz. $1.75
Wonder (S. S. & Co.)	₩ gro. $7.50

Bellows—

Blacksmith, Standard List.70@70&10%
C. E. Jennings & Co., Blacksmith..60&10%
C. E. Jennings & Co., Hand.....33⅓%

Blacksmiths—

Inch..	*30*	*32*	*34*	*36*	*38*	*40*
Each	*$3.50*	*3.75*	*4.25*	*4.80*	*5.35*	*6.15*

Extra Length:

Each..	*$4.00*	*4.55*	*5.10*	*5.60*	*6.40*	*7.50*

Molders—

Inch..	*9*	*10*	*11*	*12*	*14*	*16*
Doz...	*$6.75*	*7.25*	*8.50*	*9.50*	*12.00*	*14.50*

Hand—

Inch...	*6*	*7*	*8*	*9*	*10*	*12*
Doz....	*$3.75*	*4.25*	*4.50*	*5.00*	*5.7*	*6.75*

Net Prices.

Bells—Cow—

Ordinary goods.....75&5@75&10%
High grade.....70@70&10%
Jersey.....75&10%
Texas Star.....50%

Door—

Abbe's Gong.....45%
Barton Gong.....55%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's....40@40&10%
Yankee Gong.....55%

Hand—

Hand Bells, Polished.....60&5@66⅔%
White Metal.....55@55&10%
Nickel Plated.....50@50&10%
Swiss.....60@60&7½%
Silver Chime.....33⅓@33⅓&10%

Miscellaneous—

Farm Bells.....lb. 2@2½c
Steel Alloy Church and School.....50&10&5@60%
National Bell Foundry Co.:
Superior Cast Steel Church and School Bells.....50&10&5@60%
Wilmot & Hobbs Mfg. Co., Gongs.....70%

Belting—Rubber—

Agricultural (Low Grade).75&10@80%
Common Standard.....75@75&10%
Standard.....70@70&10%
Extra.....60&10&5%
High Grade.....50&10@50&10&5%
Boston Belting Co.:
Seamless Stitched, Imperial.....45&5%
Boston.....50&5%
Niagara.....60&5%

Leather—

Extra Heavy, Short Lap...50&10@60%
Regular Short Lap.....60@60&5%
Standard.....60&10@65&10%
Light Standard.....65@70%
Leather Lacing.....60&10%

Cotton—

Rossendale-Reddaway B. & H. Co.:
Sphinx Brand.....60&10%
Durable Brand.....70%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters.....40@50%

Bicycle Goods—

John S. Leng's Son's 1899 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—Tackle—

Common Wooden.....70&10@75%
Cleveland's Steel.....60&10@70%
Ford's Star Brand Self Lubricating.....60&10%
Hollow Steel, Ford's Pat. Star Brand.....50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50&10%
See also *Machines, Hoisting.*

Boards Stove—

Zinc, Crystal, &c.....40&10@..%

Bolts—

Carriage, Machine &c.—

Common, list Jan. 30, '95..65&2½@..%
Norway Iron, $3.00, list Oct. 7, '84.. 80@80&5%
Phila. Eagle, $3.00 list May 24, '99.... 80@80&10%
Bolt Ends, list Jan. 30, '95...70&5@..%
Machine, list Oct. 1, '99.....70&2½@..%
Machine with C. & T. Nuts.. 65&7½@..%

NOTE—*The rapid advances in manufacturers' prices enable the jobbers to cut prices freely.*

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz...	*$0.26*	*.30*	*.39*	*.47*	*.65*

Cast Iron Spring Foot:

Inch	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.35*	*1.75*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.75*	*1.05*	*1.50*

Cast Iron Shutter, Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.57*	*.80*	*1.00*

Wrought Barrel Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz....	*$0.44*	*.50*	*.61*	*.70*	*1.23*

Wrought Barrel.....70&10@75&5%
Wrought " Bronzed.40&5@50&10%
Wrought Flush, B. K..50&10@60&10%
Wrought Shutter...40&10&10@60&5%
Wrought Square Neck.....50@50&10%
Wrought Sunk.....50@50&10%
Ives' Patent Door.....60%

Stove and Plow—

Plow.....60&5@..%
Stove.....77½%

Tire—

Common.....77½%
Norway Iron.....80@80&5%
American Screw Company:
Norway Phila., list Oct. 16, '84....82½%
Eagle Phila., list Oct. 16, '84.....85%
Bay State, list Dec. 28, '99.....77½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...82½%
Eagle Phila., list Oct. 16, '84.....85%
Eclipse, list Dec. 28, '99.....77½%
Fort Chester Bolt & Nut Company
Empire, list Dec. 28, '99.....77½%
Keystone Phila., list Oct. '84.....85%
Norway Phila., list Oct. '84.....82½%
peon Nut Co.:
Tire Bolts.....77½%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1½*	*1¾*	₩
Per doz...	*$4.30*	*5.00*	*5.75*	*7 25*
Inch		*2¼*		*2½*
Per Doz.....		*$8.65*		*11.50*

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25%

Boring Machines—See *Machines, Boring.*

Boxes, Mitre—

C. E. Jennings & Co.....40%
Seavey's, per doz., $30.....40%

Braces—

NOTE.—*Most Braces are sold at net prices.*

Common Ball, American...$1.15@1.25
Barber's.....50&10&10@60&10%
Fray's Genuine Spofford s.....60%
Fray's No. 70 to 120, 81 to 133, 207 to 414.....60%
C. E. Jennings & Co.....50&10%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Patent..50%
P., S. & W. Co Peck's Patent.....60&10&65&5%

Brackets—

Wrought Steel.....75&5@75&10%
Bradley's Wire Shelf:
Full cases.....80%
Broken cases.....75&10%
Griffin's Pressed Steel.....75%
Griffin's Folding Brackets.....70&10%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Wire Goods Co.....75%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—

Boss.....₩ gro. $48.00
Hoosier.....₩ gro. $36.00

Bull Rings—See *Rings, Bull.*

Butts—Brass—

Wrought list Sept., '96.....40@40&5%
Cast Brass, Tiebout's.....50%

Cast Iron—

Fast Joint, Broad.....50@50&10%
Fast Joint, Narrow.....50@50&10%
Loose Joint.....70&5@70&10%
Loose Pin.....70&5@70&10%
Mayer's Hinges.....70&5@70&10%
Parliament Butts.....70&5@70&10%

Wrought Steel—

Table and Back Flaps.....60%
Narrow and Broad.....60%
Inside Blind.....65&10%
Loose Pin.....60&10%
Loose Pin, Ball and Steeple Tip.....75%
Japanned, Ball Tip Butts...60%
Bronzed Wrt. Nar. and Inside Blind Butts.....45&20@45&25%

Extra 25%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....40&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong.....per lb...3½@4c
Sharp, 1 prong.....per lb.... 4@4½c
Perkins' Blunt Toe.....₩ lb 3½¢
Perkins' Sharp Toe.....₩ lb 4 ¢

Can Openers—See *Openers, Can*

Cans, Milk—

	5	8	10 gal.	
Illinois Pattern	$1 75	2.10	2.25	each.
Iowa Pattern	....	2.40	2.60	each.
Buffalo Pattern	....	2.80	2.50	each.
	20	30	40	qts.
New York Patt'rn	3.00	3.25	3.40	each.
Baltimore Patt'rn	2.50	2.85	3.10	each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$48.00	60.00	108 gro

Caps—Percussion—

Eley's E. B.	.60c
G. D.	per M 32@34c
F. L.	per M 37@40c
G. E.	per M 47@50c
Musket	per M 57@60c

Primers—

Berdan Primers, $1.00	.5%
B. L. Caps (Sturtevant Shells) $1.00	.5%
All other primers	*$1.10@$1 19*

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—
Blank Cartridges:
22 C. F., $5.50.....10&15@10&10%
32 C. F., $7.00.....10&5@10&10%
22 cal. Rim, $1.50.....10&5@10&10%
32 cal. Rim, $2.75.....10&5@10&10%
B. B. Caps, Con., Ball Swgd.$1.80@1.85
B. B. Caps, Round Ball...$1.10@1.15
Central Fire.....35@25&5%
Pistol and Rifle.....15&5@15&10%
Primed Shells and Bullets.....15&5@15&10%
Rim Fire, Sporting.....50@50&5%
Rim Fire, Military.....15&5@15&10%

Casters—
Bed.....70&10@70&10&5%
Plate.....75&10@75&10&5%
Philadelphia.....75&10@75&10&5%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Martin's Patent (Phoenix).....45%
Payson's Anti-Friction.....70&10&10&10%
Standard Ball Bearing.....45%
Tucker's Patent, low list.....80%

Cattle Leaders—
See *Leaders, Cattle.*

Chain, Coil—
American Coil, Cask lots:

3-16	¼	5-16	⅜	7-16	½	9-16
6.00	6.00	5.00	4.25	4.10	4.00	4.05
⅝	¾ to 1 in.			⅛ to 1¼ inch.		
4.35	4.40			3.75 per 100 lb.		

Less than Cask lots add 25c.
German Coil.....60&10@10%

Halters and Ties—
Halter Chains.....60@10@60@10@10%
German Halter Chain, list July 24, '97.....80&10@60@10@10%
Cow Ties.....60%

Trace, Wagon, &c.—
Traces, Western Standard: 100 pair
6¼—6-8, Straight, with ring...$30.00
6½—6-8, Straight, with ring...$31.00
6½—8-8, Straight, with ring...$35.00
6¼—10-2, Straight, with ring...$38.00
Add 2c per pair for Hooks.
Twist Traces 2¢ per pair higher than Straight Link.
Trace, Wagon and Fancy Chains..50&10@50&10&5%

Miscellaneous—
Jack Chain, list July 10, '93:
Iron.....60@60&10%
Brass.....60@60&10%
Safety Chain.....70&5@70&10%
Gal. Pump Chain.....lb. 4@4½c
Covert Mfg. Co.:
Breast.....35&2%
Halter.....35&2%
Heel.....35&2%
Rein.....35&2%
Stallion.....35&2%
Covert Sad. Works:
Breast.....70%
Halter.....70%
Hold Back.....70%
Rein.....70%
Oneida Community:
Am. Coil and Halters.....40@45&5%
Am. Cow Ties.....45@50%
Eureka Coil and Halter.....45@50&5%
Niagara Coil and Halters....45@50&5%
Niagara Cow Ties.....45&5@50&10&5%
Wire Dog Chains.....45@50&5%
Wire Goods Co.:
Dog Chain.....60&10%
Universal Dbl-Jointed Chain.....50%

Chalk—(From Jobbers.)
Carpenters' Blue.....gro. 42@45c
Carpenters', Red.....gro. 37@40c
Carpenters', White.....gro. 32@35c
See also Crayons.

Chalk Lines—See *Lines.*

Checks, Door—
Bardsley's.....40&10%
Columbia.....50&10%
Eclipse.....60@60&10%

Chests, Tool—
American Tool Chest Co.:
Boys' Chests, with Tools.....25%
Youths' Chests, with Tools.....40%
Gentlemens' Chests, with Tools.....50%
Farmers', Carpenters', etc., Chests, with Tools.....30%
Machinists' and Pipe Fitters' Chests, Empty.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....20%

Chisels—
Socket Framing and Firmer
Standard List.....70&5@70&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60&10%
C. E. Jennings & Co. Socket Framing No. 15.....60&10%
Swan's.....70&5%
L. & I. J. White.....80@30&5%
Tanged—
Tanged Firmers.....40@5@40&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 101, 181...25%
L. & I. J. White, Tanged.....25&5%
Cold—
Cold Chisels, good quality.lb. 13@15c
Cold Chisels, fair quality..lb. 11@13c
Cold Chisels, ordinary.....lb. 8@9c

Chucks—
Beach Pat., each $8.00.....30%
Massey's Planer and Milling.....15@20%
Skinner Patent Chucks:
Combination Lathe Chucks.....40%
Drill Chucks, Patent and Standard..50%
Drill Chucks, New Model.....25%
Independent Lathe Chucks.....40%
Improved Planer Chucks.....25%
Universal Lathe Chucks.....40%
Face Plate Jaws.....40%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....40%
Cear Drill.....30%
Geared Scroll.....30%
Independent.....40%
Union Drill.....30%
Universal.....40%
Face Plate Jaws.....35%

Clamps—
Adjustable, Hammers'.....30@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P., S. & W. Co..40&10%
Carriage Makers' Sargent's.....50&10%
Besly, Parallel.....33⅓&10%
Lineman s, Utica Drop Forge & Tool Co.....40%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners Sidewalk—
Star Socket, All Steel....₩ doz. $4.00 net
Star Shank, All Steel....₩ doz. $3.75 net
W. & C. Shank, All steel, 7½ in. ₩ d z., $3.05; 8 in., $3.10; 8½ in., $3.25.

Cleavers, Butchers'—
Foster Bros.....30%
New Haven Edge Tool Co.'s.....40%
Fayette R. Plumb.....33⅓&10%
P., S & W.....50@50&5%
L. & I. J. White.....25%

Clippers—
Chicago Flexible Shaft Company:
Handy Toilet.....₩ doz. $7.20
Mascotte Toilet.....₩ doz. $3.40
Monitor Toilet.....₩ doz. $9.00
Stewart's Patent.....₩ doz. $10.00

Clips Axle—
Eagle and Superior ¼ and 5-16 inch.....70&10%
Norway, ¼ and 5-16 inch..70@70&10%

Cloth and Netting, Wire—See *Wire, &c.*

Cocks, Brass—
Hardware list:
Compression and Plain Bibbs.65&5%
Globe, Kerosene, Racking, &c., Cocks.....65&10%

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Brass, Pope & Stevens' list.....40%
Embossed, Glit, Pope&Stevens' list30&10%
Leather Pope & Stevens' list.....40%

Compasses Dividers, &c.
Ordinary Goods.....75@75&5%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Call's Patent Inside.....55%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%
J. Stevens A. & T. Co.....25&10%

Compressors Corn Shock—
J. B. Hughes' ₩ doz.....$2.50

Conductor Pipe, Galva.—
L. C. L. to Dealers:

Territory.	*Not nested.*	*Nested.*
Eastern	70c&2½c&10%	70c&5c&10%
Central	65c&10c&10%	70c&10%
Southern	65c&10%	65c&2½c&10%
S. Western	60c&12½c&10%	60c&15c&10%

Terms, 2% for cash.
Jobbers receive extra 12½&2½ on carloads loose, and extra 12½ on carloads crated.
See also *Eave Troughs.*

Coolers, Water—

Nos.	2	3	4	6
Labrador	$11.50	$14.00	$17.50	$20.00
8 gal.	$26.00			

Nos	2	4	6	8
Iceland..	$23.00	$25.00	$30.00	$37.50
10	14 gal.			
$57.00	$72.00			

Coopers' Tools—
See *Tools, Coopers'.*

Cord—Sash—
Braided, Drab.....lb. 25c
Braided, White, Common..lb. 17@18c
Cable Laid Italian..lb. A, 18c; B, 16c
Common India.....lb 9 @9½c
Cotton Sash Cord, Twisted....12@16c
Patent Russia.....lb. 12½@13c
Cable Laid Russia.....lb. 13½@14c
India Hemp, Braided.....lb 14@15c
India Hemp, Twisted.....lb. 10@12c
Patent India, Twisted.....lb.10@12c
Pearl Braided, cotton.....₩ b 17½¢
Massachusetts, White.....₩ b 22½¢
Massachusetts, D'ab.....₩ b 26½¢
Eddystone Braided Cotton.....₩ b 19¢
Harmony Cable Laid Italian.....₩ b 18¢
Ossawan Mills:
Crown, Solid Braided White...₩ b 22¢
Braided, Giant, White.....₩ b 20¢
Peerless:
Cable Laid Italian.....16¢
Cable Laid Russian.....14¢
Cable Laid India.....12¢
Braided India.....18¢
Phœnix, White.....19¢
Samson, Nos. 7 to 12:
Braided, Drab Cotton.....₩ b 32½¢
Braided, Italian Hemp...₩ b 32½¢
Braided, Linen.....₩ b 40¢
Braided, White Cotton, Spot.₩ b 28½¢
No. 6 cords, 1¢ extra.
Silver Lake:
A quality, Drab, 40¢.....15%
A quality, White, 35¢.....15%
B quality, Drab, 35¢.....15%
B quality, White, 30¢.....15%
Italian Hemp, 40¢.....15%
Linen, 57½¢.....15%

Wire, Picture—
Braided or Twisted.....85&10%
Note.—There is a good deal of confusion in lists, some using old list and others the new list.

Corn Knives and Cutters—See *Knives, Corn.*

Corn Planters—
See *Planters, Corn—*

Crackers, Nut—
Little Giant.....₩ gr. $24.00

Cradles—
Grain.....50%

Crayons—
White Round Crayons, gross.5½@6c
Cases, 100 gro., $4.50, at factory.
D. M. Steward Mfg. Co.
Metal Workers' Crayons.gr. $2.50
Soapstone Pencils, round, flat or square.....gr.$1.50
Rolling Mill Crayons.....gr. $2.50
Railroad Crayons (composition) gr. $2.00
Case lots 20%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—
Fort Madison, Heavy.....₩ doz. $7.00
Fort Madison, Light.....₩ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—
Victor Garden.....₩ doz. $10.00

Cutlery, Table—
International Silver Company:
No. 12 Medium Knives, 1847...₩ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....₩ doz. $3.00
Wm. Rogers & Son.....₩ doz. $2.50
Simeon L. & Geo. H. Rogers Company:
12 dwt. Medium Knives.....₩ doz. $3.00
No. 77 Medium Knives.....₩ doz. $2.50

Cutters—Glass—
H. H. Mayhew Co.....40%
Smith & Hemenway Co.....50%

Meat—
Hale's..Nos. 11 & 111 12 & 112 13 & 113
Per doz.. $9.50 12.50 16.00
American.....30%

Nos	1	2	3	4	5	6
Each	$5	$7	$10	$25	$50	$60

Connecticut.....50%

No	20	40	60	8	10	12
Each	$1.75	2.00	2.25	3.00	3.00	4.00

Enterprise.....25@25&7½%

Nos	10	12	22	32
Each	$2	$3	$3.50	$4	$6

Dixon's, ₩ doz.....30&10@40%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Home No. 1, ₩ doz. $22.75.....50&10%
Little Giant, ₩ doz.....33⅓&5@40%

Nos.	305	310	312	390	322
	$35.00	$48.00	$44.00	$72.00	$68.00

Sterling.....33⅓&5%

Nos	1	2
Each	$2.00	$2.50

New Triumph No. 605, ₩ doz. $24.00.....30&10@40%
Woodruff's, ₩ doz.....30&10@40%

Nos	100	150
	$15.00	$18.00

Chadborn's Smoked Beef Cutter, ₩ doz. $60.00
Enterprise Beef Shavers.....35@30%

Slaw and Kraut—
Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9..55%
Kraut Cutters 36 x 12, 40 x 12.....40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife, ₩ gr....$18@$20
Slaw Cutters, 2 Knife, ₩ gr....$22@$30

Tobacco—
All Iron, Cheap.....*doz. $4.25@$4.50*
Enterprise.....25@5%
National, ₩ doz. $21.00.....40%
Sargent's, ₩ doz., No. 2.....45&10%
Sargent's No 12 and 21.....60&10%

Washer—
Appleton's, ₩ doz. $16.00....50&10&10%
Bonney's.....40%

Diggers, Post Hole, &c.—
Dalbey Post Hole Auger...per doz., $9.00
Iwan's Improved Post Hole Auger....40%
Iwan's Perfection Post Hole Digger...₩ doz. $9.00
Kohler's Universal.....₩ doz. $14.00
Kohler's Little Giant.....₩ doz. $14.00
Kohler's Hercules.....₩ doz. $12.00
Kohler's Invincible.....₩ doz. $10.00
Kohler's Rival.....₩ doz. $9.00
Kohler's Pioneer.....₩ doz. $9.00
Never-Break Post Hole Diggers, ₩ doz. $24.00.....60%
Samson, ₩ doz. $34.00.....25%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Doors, Screen—
Porter's Plain, No. 6.....₩ doz. $6 50
Porter's Ornamental, No. 70. ₩ doz. $10.00

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, ₩ doz. $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Common Blacksmiths' Drill..each $1.50@$1.75
Blacksmiths' Self-feeding.....*each $3.75@$4.00*
Breast, Millers Falls, each $3.00..15&10%
Breast, P., S. & W.....40@40&5%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills Nos. 2 and 3.....16%
Johnson's Drill Points.....25&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....20@25%
Ratchet, Whitney's, P. S. & W.....50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓&5%

Twist Drills—
Standard List.....*60&5@60&10%*

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Screw Driver Bits...per doz. 45@70c
Baisey's Screw Holder and Driver, ₩ doz. 2¼-inch, $6; 4-in., $7.50 6-in., $9...40%
Buck Bros.....30%
Buck Bros' Screw Driver Bits.....30%
Champion.....40&10%
Douglass Mfg. Co.....20@20&10%
Fray's Hol. H'dle Sets, No. 3, $12.00 50%
Gay's Double Action Ratchet.....35%
Goodell's Automatic 50&10&10@50&10&10&5%
Mayhew's Black Handle.....50%
Mayhew's Monarch.....40&10%
New England Specialty Co.....50&10%
Sargent & Co.'s:
Nos. 1,50,55 and 60.....30&10&10%
Nos. 20 and 40.....66⅔&10%
Smith & Hemenway Co.....40&5%
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles 70@70&10&10%
No. 86.....70@70&10&10%
Swan's:
Nos. 65 to 68.....50%
No. 40.....40&10%
Nos. 25, 35 and 45.....20&10&10%

Eave Trough Galvanized

Territory.	*L. C. L.*	
Eastern	*75c&c10105%*	*Carloads extra 10½&*
Central	*75c&7½&c10%*	
Southern	*70c&7½&c10%*	
S. Western	*70c&10c&10%*	

Terms, 2% for cash.
See also *Conductor Pipe and Elbows.*

Egg Beaters—See *Beaters, Egg*
Egg Openers—
See *Openers, Egg.*

Elbows and Shoes—
Factory shipments.....60@60&10%
Perfect Elbows (S. S. & Co.).....40%

Emery, Turkish—

	4to6	5&6to150	Flour
Kegs	*lb. 5c*	*5½c*	*3¾c*
¼ Kegs	*lb. 5½c*	*5¾c*	*3¾c*
Kegs	*lb 6c*	*6c*	
10-lb cans, 10 in case.6½c		*7c*	*6c*
10-lb. cans, less than 10.10c		*10c*	*8c*

Note.—In lots 1 to 3 tons a discount of 10% is given.

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—
See *Pins, Escutcheon.*

Extractors, Lemon Juice—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's.....50&10%

Faucets—
Cork Lined.....70c&5@70c10c&5%
Metallic Key, Leather Lined.....70@70&10%
Red Cedar.....50@50&10%
B. & L. B. Co.:
Lockport, Metal Plug, reduced list60&5%
Star.....60@60&5%
Star, Metal Plug new list....40@40&5%
West's Lock, Open and Shut Key50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Metal Key.50&10%
John Sommer's Duplex Metal Key....60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined...50%
John Sommer's Reliable Cork Lined 50&10%
John Sommer's Chicago Cork Lined..60%
John Sommer's O. K. Cork Lined.....50%
John Sommers No Brand, Cedar.....50%
John Sommer's Perfection Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....35%
Improved, ¾ and ½ inch.....35%
Self Measuring:
Enterprise, ₩ doz. $60.00.....40&10%
Lane's, ₩ doz. $36.00.....40&10%
National Measuring, ₩ doz. $66.00...40%

Felloe Plates—
See *Plates, Felloe.*

Files—Domestic—
List revised Nov. 1, 1899.
Best Brands.....70@75&5%
Good Brands.....75&10@75&10&10%
Fair Brands.....80@80&10%
Second Quality.....80&10@80&25%
Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....35%

Fixtures, Grindstone—
Net Prices:

Inch,...	*15*	*17*	*19*	*21*	*24*
Per doz.	*$2.60*	*2.75*	*3.00*	*3 50*	*4.40*

P., S. & W. Co.....50@50&5%
Reading Hardware Co.....60%
Sargent's.....60&10&10%
Stowell's Giant Grindstone Hanger.....₩ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy.....50&10&10%
Stowell's Grindstone Fixtures Light...60&10%

Fodder Squeezers—
See *Compressors.*

Forks—
Sept. 1. 1900, list.
Grain or Barley Forks, 18 to 20 inches.....70c&5%
Hay, 2 tine.....65%
Hay, 3 tine.....66⅔&5%
Hay, 4 tine, Header and Barley Forks, 13 to 16 inches.....66⅔&5%
Manure, 4 tine.....70%
Manure, 5 and 6 tine.....70%
Spading.....70c&5%
Extra 10c&5%
Iowa Dig-Eay Potato.....65%
Victor, Hay.....66⅔&5%
Victor, Manure.....70%
Victor, Header.....60&30%
Champion, Hay.....66⅔&5%
Champion, Manure.....70%
Columbia, Hay.....66⅔&5%
Columbia, Manure.....70%
Columbia, Spading.....70%
Hawkeye Wood Barley 4 tine ₩ doz. $5.00; 6 tine, $6.00.
W. & C. Potato Digger.....65%
Acme Hay.....60&10&7½%
Acme Manure, 4 tine.....60&20&10%
Acme Manure, 6 tine.....66⅔&10&5%
Dakota Header.....65&15&5%
Jackson Steel Barley.....65&15&5%
Kansas Header.....66⅔%
W. & C. Favorite Wood Barley 4 tine, ₩ doz., $5.00; 6 tine, $6.00
Plated.—See *Spoons.*

Frames—Saw—
Red, Polished and Varnished..doz. $1.15@$1.30
White.....*doz. 75@80c*

Screens and Frames—
See *Screens.*

Freezers Ice Cream—

Qts...	*3*	*5*	*4*	*6*	*8*	*10*
Best	*$1.15*	*1.65*	*1.95*	*2.40*	*3.20*	*4.30*
Good	*$1 25*	*1.40*	*1.70*	*2.15*	*2.75*	*3.75*
Fair	*$1.00*	*1.10*	*1.30*	*1.75*	*2.30*	*2.90*

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse—*Per 1000 Feet.*
Hemp Fuse.....*$2.60*
Cotton Fuse.....*2.90*
Single Taped Fuse.....*3.25*
Double Taped Fuse.....*4.30*
Triple Taped Fuse.....*5.00*
10&5%

Gates, Molasses and Oil—

Stebbins' ..... 30@30&10%

Gauges—

Marking, Mortise, &c. ..... *55&10@55&10@10&10%*

Barrett's Comb. Roller Gauge. ..... ₩ doz. $6.75@7.25

Stanley R. & L. Co.'s Butt & Babbet Gauge ..... 20@20&10&10%

Wire, Brown & Sharpe's 25%

Wire, Morse's 25%

Wire P., S. & W. Co ..... 30@30&10%

Gimlets—Single Cut—

Nail, Metal, Assorted gro. $1.40@1.60

Spike, Metal, Assorted gro. $2.80@3.25

Nail, Wood Handled, Assorted. gro. $1.75@2.00

Spike, Wood Handled, Assorted gro. $2.25@3.50

Glass, American Window

Jobbers' List, Jan. 21, 1901.

Less than Car Lots from Store ... 90%

Carloads from Store ... 90&7½%

Car Lot Consignments, f.o.b. factory. 90&12½%

Glue—Liquid, Fish—

List A, Bottles or Cans, with Brush. 37½@50%

List B, Cans (½ pts., pts., qts.) ... 33⅓@38%

List C, Cans (½ gal., gal.) ... 25@45%

International Glue Co. (Martin's) ... 5&10@50%

Glue Pots—See *Pots, Glue.*

Grease, Axle—

Common Grade ... gro. $5.00@6.00

Dixon's Everlasting ... 10-lb pails, en. 85¢

Dixon's Everlasting, in bxs. ₩ doz. 1 lb $1.20; 2 lb $2.00

Snow Flake:
1 qt. cans, per doz. $2.00; 2 qt., $3.20; 1 gal. cans per doz. $6.00; 5 gal. $16.00; 5 gal. $24.00 } 33⅓

Grindstones—

Bicycle Emery Grinder ... $6.50

Bicycle Grindstones, each ... $2.50@3.00

Pike Mfg. Co:
Improved Family Grindstones, per inch, per doz. ... $2.00 } 33⅓
Pike Mower Knife and Tool Grinder, each ... $5.00

Velox Ball Bearing, mounted, Angle Iron Frames ... each, $3.25

Guards, Snow—

Cleveland Wire Spring Co.:
Galv. Steel ₩ 1000 ... $9.00
Copper ₩ 1000 ... $18.00

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—

gro.
Peg Patent, Leather Top ... $4.90@5.25
Peg Patent, Plain Top ... $3.50@3.75
Sewing, Brass Ferrule ... $1.50@1.60
Saddlers', Brass Ferrule ... $1.35@1.45
Peg, Common ... $1.25@1.35
Brad, Common ... $1.50@1.75

Halters and Ties—

Covert Mfg. Co.:
Web ... 45&2%
Jute Rope ... 45&2%
Sisal Rope ... 30&2%

Covert's Saddlery Works:
Web and Leather Halters ... 70%
Jute and Manila Rope Halters ... 70%
Sisal Rope Halters ... 60&20%
Jute, Manila and Cotton Rope Ties ... 70%
Sisal Rope Ties ... 60&20%

Hammers—Handled Hammers—

Heller's Machinists' ... 50&50&5%
Heller's Farriers ... 50&50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 ... 40@40&10&10%
Peck, Stow & Wilcox ... 50&10%
Fayette R. Plumb:
Plumb, A. E. Nail ... 33⅓&5@33⅓&10&5%
Engineers' and B. S. Hand ... 50&10&7½@50&10&10&7½%
Machinists' Hammers ... 50&10@50&10&10%
Riveting and Tinners' ... 40&7½@40&10&7½%
Sargent's C. S. New List ... 45%

Heavy Hammers and Sledges—

3 lb. and under ... lb. 45c
3 to 5 lb ... lb. 36c } 30@30&10%
Over 5 lb ... lb. 30c
Wilkinson's Smiths' ... 3½c@10c lb.

Handcuffs and Leg Irons

See *Police Goods.*

Handles—Agricultural Tool Handles—

Axe, Pick, &c ... 60@60&10%
Hoe Rake, Fork, &c ... 60@60&10%
Shovel, &c., Wood D Handle ... 50@50&5%

Cross-Cut Saw Handles—

Atkins' ... 40&5%
Champion ... 45@45&10%
Disston's ... 50%

Mechanics' Tool Handles—

Auger, assorted ... gro. $2.80@3.50
Brad Awl ... gro. $1.25@1.50
Chisel Handles:
Apple Tanged Firmer, gro. ass'd. $2.25@3.35; large, $2.50@3.60.
Hickory Tanged Firmer, gro. ass'd. $1.75@2.20; large, $2.50@3.70.
Apple Socket Firmer, gro. ass'd, $1.70@1.85; large, $2.00@2.25
Hickory Socket Firmer, gro ass'd. $1.60 @ $1.75; large, $1.75 @ $2.00
Hickory Socket Framing, gro. ass'd, $2.50@2.75; large, $2.65@2.85
File, assorted ... gro. $1.00@1.15
Hammer, Hatchet, Axe, &c ... 60%
Hand Saw, Varnished, doz. 70@75c
Not Varnished ... 55@60c
Plane Handles:
Jack, doz. 25c; Jack Bolted, 55@60c
Fore, doz. 35@38c; Fore, Bolted ... 70@75c

Nicholson Simplicity File Handle, ₩ gro ... $2.85@$1.50

Hangers—

Barn Door, New Pattern, Round Groove, Regular:

Inch	*3*	*4*	*5*	*6*	*8*
Doz	*$0.35*	*1.20*	*1.50*	*1.90*	*2.50*

Barn Door, New England Pattern, Check Back, Regular:

Inch	*3*	*4*	*5*	*6*
Doz	*$1.50*	*1.75*	*2.50*	*3.00*

Chicago Spring Butt Co.:
Friction ... 25%
Oscillating ... 25%
Big Twin ... 25%

Chisholm & Moore Mfg. Co.:
Baggage Car Door ... 50%
Elevator ... 40%
Railroad ... 55%

Columbian Hdw. Co.:
American Trackless ... 33⅓&10%

Cronk Hanger Co.:
Loose Axle ... 60%
Roller Bearing ... 60&10%

Lane Bros.:
Parlor, Ball Bearing ... $4.00
Parlor, Standard ... $3.25
Parlor, New Model ... $2.75
Parlor New Champion ... $2.25
Barn Door, Standard ... 60&10%
Covered ... 50&10&10&5%
Special ... 60&10%

Lawrence Bros.:
Advance ... 60%
Cleveland ... 70%
Crown ... 60%
New York ... 60%
Peerless ... 60&10%
Sterling ... 60%

McKinney Mfg. Co.:
No. 1, Special, $15 ... 60&10%
No. 2, Standard, $18 ... 60&10%

Stowell Mfg. and Foundry Co.:
Acme Parlor Ball Bearing ... 40%
Atlas ... 60%
Badger Barn Door ... 50%
Baggage Car Door ... 50%
Climax Anti-Friction ... 50%
Elevator ... 40%
Express ... 50%
Interstate ... 60%
Lundy Parlor Door ... 50%
Magic ... 50%
Matchless ... 60%
Nansen ... 60&10%
Railroad ... 50%
Street Car Door ... 50%
Steel, Nos. 300, 404, 500 ... 40&15%
Stowell Parlor Door ... 50%
Wild West, Nos. 301, 404, 500 ... 50%
Zenith for Wood Track ... 50%

Taylor & Boggis Foundry Co.:
Kidder's ... 50&15&10&5%

Wilcox Mfg. Co.:
Bike Roller Bearing ... 60&10%
C. J. Roller Bearing ... 60&10%
Cycle Ball Bearing ... 50%
Dwarf Ball Bearing ... 40%
Ives, Wood Track ... 60&10%
L. T. Roller Bearing ... 60&10&5%
New Era Roller Bearing ... 50&10%
O. K. Roller Bearing ... 60&10&5%
Prindle, Wood Track ... 60%
Richards' Wood Track ... 60%
Richards' Steel Track ... 50&10%
Spencer Roller Bearing ... 60&10%
Tandem Nos. 1 and 2 ... 60%
Underwriters' Roller Bearing ... 40%
Velvet ... 50%
Wilcox Auditorium Ball Bearing ... 30%
Wilcox Barn Trolley No. 123 ... 40%
Wilcox Elevator Door Hangers, Nos 112 and 122½ ... 50%
Wilcox Elevator Door Hangers, No. 132 ... 40%
Wilcox Fire Trolley, Roller Bearing ... 30%
Wilcox Le Roy Noiseless Ball Bearing ... 40%
Wilcox New Century ... 50&10&10%
Wilcox O. K. Steel Track ... 50%
Wilcox O. K. Trolley ... 50%
Wilcox Trolley Ball Bearing ... 40%
Wilcox Wideman Narrow Gauge Ball Bearing ... 40%

Extra 5@10% often given.

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—

McKinney's Perfect Hasp ₩ doz ... 50%
Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—

Best Brands ... 60@50&10%
Cheaper Brands ... 60@60&10%
Note.—Net prices often made.

Hay and Straw Knives—

See *Knives.*

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1888 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No	*1*	*2*	*5*
Doz. pair	*$0.75*	*1.45*	*2.90*

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No	*1*	*1¼*	*2*	*2½*
Doz. pair	*$0.60*	*.55*	*.52*	*.45*

Mortise Reversible Shutter, (Buffalo, &c.)

No	*1*	*1½*	*2*
Doz. pair	*$0.65*	*.60*	*.55*

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50 ... 10%
Parker ... 70&2½%
Reading's Gravity ... 70&10%
Sargent's, Nos. 1, 2, 5, 11 & 13 ... 70&10&70&20%
Stanley's Steel Gravity Blind Hinges, ₩ doz. sets, without screws, $0.80; with screws, $1.15.
Wrightsville H'dware Co.:
O. S., Lull & Porter ... 80&2½%
Acme, Lull & Porter ... 75&10%
Queen City Reversible ... 75&10%
Stenger's Positive Locking, Nos. 1 & 3 ... 70&10&5%
Shepard's Noiseless, Nos. 60, 65, 55 ... 70&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5 ... 75&7½%
1902, Old Pat'n, Nos. 1, 3 & 5 ... 75&7½%
Tip Pat'n, Nos. 1, 3 & 5 ... 75&7½%
Buffalo Gravity Locking, Nos. 1, 3 & 5 ... 75&7½%
Shepard's Double Locking, Nos. 20 & 25 ... 70&10%
Champion Gravity Locking, No. 75 ... 75&7½%
Steamboat Gravity Locking, No. 10 ... 75&7½%
Pioneer, Nos. 060, 45 & 5½ ... 75&7½%
Empire, Nos. 101 & 103 ... 70&7½%
W. H. Co.'s Mortise Gravity Locking, No. 2 ... 60&10%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No	*1*	*2*	*3*
Hinges with Latches	*$1.85*	*1.90*	*2.65*
Hinges only	*$1.20*	*1.50*	*2.00*
Latches only	*.60*	*.60*	*.65*

New England:
With Latch ... doz. ... @$1.55
Without Latch ... doz. ... @$1.25

Reversible Self-Closing:
With Latch ... doz. ... @$1.80
Without Latch ... doz. ... @$1.45

Western:
With Latch ... doz. $1.40@1.75
Without Latch ... doz. $0.95@1.30

Wrightsville H'dware Co.:
Shepard's or Clark's, doz. sets,

No.	1	2	3
Hinges with Latches	$1.80	2.00	2.75
Hinges only	1.20	1.50	2.10
Latches only	.55	.65	.70

Spring Hinges—

Holdback, Cast Iron, gro. $8.00@9.00
Non-Holdback, Cast Iron ... gro $7.00@7.50

J. Bardsley
Bardsley's Patent Checking ... 15%

Bommer Bros.:
Bommer Ball Bearing Floor Hinges ... 40%
Bommer Spring Hinges ... 40%

Chicago Spring Butt Co.:
Chicago ... 25%
Floor Hinge ... 50%
Garden City Engine House ... 25%
Keene's Saloon Door ... 25%
Triple End ... 50%

Columbian Hdw. Co.:
Acme, Wrt. Steel ... 30%
Acme, Brass ... 30%
American ... 30%
Columbia, No. 14 ... ₩ gr. $9.00
Columbia, No. 18 ... ₩ gr. $25.00
Columbia, Adjustable ... 30%
Gem, new list ... 25%
Clover Leaf ... ₩ gr. $12.50
Oxford, new list ... 25%

Hoffman Hinge & Foundry Co.:
No. 20 & 30 Holdback Detachable $8.50

Lawson Mfg. Co.:
Marchi es ... 35%
Matchless Pivot ... 45%

Payson Mfg. Co.:
Oblique ... 50&10%

Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₩ gr. $12.50
Ideal, No. 4 ... ₩ gr. $9.00
New Idea No. 1 ... ₩ gr. $9.00
New Idea, Double Acting ... 45%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar. 15, 1901:
Light Strap Hinges ... 70%
Heavy Strap Hinges ... 75&10%
Light T Hinges ... 66⅔%
Heavy T Hinges ... 60&5%
Extra Heavy T Hinges ... 75%
Hinge Hasps ... 55%
Cor. Heavy Strap ... 75&10%
Cor. Ex. Heavy T ... 75%
Extra 10@20&10%

Screw Hook and Strap: 6 to 12 in ... lb 3½c; 1 to 20 in ... lb. 3 c; 22 to 36 in ... lb. 2½c

Screw Hook and Eye:
¾ to 1 inch ... lb. 5 c
⅝ inch ... lb. 6 c
½ inch ... lb. 7 c

Miscellaneous—

Hoffman's Steel Spring Butt Hinges ... 40&10%
Hoffman's Offset Refrigerator Hinges ... 40&10%

Hods, Coal—

	15	*16*	*17*	*18 inch.*
Galv. Open	*$2.70*	*3.00*	*3.30*	*3.60* ₩ doz.
Jap. Open	*$2.10*	*2.50*	*2.70*	*3.00* ₩ doz.
Galv. Fun'el	*$3.30*	*3.60*	*3.90*	*4.20* ₩ doz.
Jap. Funnel	*$2.70*	*3.00*	*3.30*	*3.60* ₩ doz.

Hoes—Eye—

Scovil and Oval Pattern ... 60&5@60&10&5%
Grub, list Feb. 23, 1899 ... 70@70&10%
D. & H. Scovil ... 35%

Handled—

Sept. 1, 1900, List:
Field and Garden ... 75&2½%
Ladies', Boys', Toy and Onion ... 70&10&10%
Street and Mortar ... 75&7½&2½%
Cotton ... 70&10&10&5&2½%
Planters' ... 70&30%
Weeding ... 75%
Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.

Ft. Madison Crucible Garden Hoe ... 75&2½%
Ft. Madison Crescent Cultivator Hoe, per doz ... 75&10&2½%
Ft. Madison Mattock Hoes:
Regular Weight ... ₩ doz. $4.50
Junior Size ... ₩ doz. $4.00
Ft. Madison Sprouting Hoe, ₩ doz. $4.80
Ft. Madison Dixie Tobacco Hoe ... 75&20%
Kretsinger's Cut Easy, per doz ... 75&2½%
Warren Hoe ... 60%
W. & C. Ivanhoe ... 75&2½%
B. B. Cultivator Hoe ... 75&10&2½%
Acme Weeding ... 75&10&2½%
W. & C. Lightning Shuffle Hoe, ₩ doz. $4.85

Hog Rings and Ringers—

See *Rings and Ringers.*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow Ware—

See *Ware, Hollow.*

Holders—Bit—

Angular, ₩ doz. $24.00 ... 45&10%

Door—

Empire ... 50%

File and Tool—

C. E. Jennings & Co. Model Tool Holders ... 33⅓%
Nicholson File Holders and File Handles ... 33⅓%

Hooks—Cast Iron—

Bird Cage, Reading ... 80%
Bird Cage, Sargent's List ... 50&10&10%
Ceiling, Sargent's List ... 40&10%
Clothes Line, Hoffman's ... 40&10%
Clothes Line, Reading List ... 65&10@65&10&10%
Clothes Line, Sargent's List ... 50&10&10%
Coat and Hat, Sargent's List ... 45&10%
Clothes Line, Stowell's ... 70%
Coat and Hat, Stowell's ... 70%
Coat and Hat, Reading ... 70@75%
Coat and Hat, Wrightsville ... 65&10%
Harness, Reading List ... 70&10@75%

Wire—

Belt ... 80%
Wire C. & H. Hooks ... 60&10@60&10&5%
Atlas, Coat and Hat:
Single Cases ... 45%
10 Case Lots ... 45&10%
Czar Harness ... 50&10&5%
Wire Coat and Hat:
Acme ... 80%
B. B ... 60%
V Brace, Chief and Czar ... 60%
Gem ... 60%
Bright Wire Goods—See *Wire.*

Wrought Iron—

Box, 6 in., per doz. $1.50; 8 in., $1.75; 10 in., $2.00.
Cotton ... doz. $1.05@1.25
Wrought Staples, Hooks, &c.—See *Wrought Goods.*

Miscellaneous—

Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50

Grass ... Nos.	*1*	*2*	*3*	*4*
Best	*$1.50*	*1.75*	*2.00*	
Common	*$1.30*	*1.50*	*1.60*	*1.80*

Potato and Manure ... 70%
Whiffletree ... lb. 4½c
Hooks and Eyes:
Brass ... 60&10&10@70%
Malleable Iron ... 70&5@70&10%
Covert Saddlery Works' Self Locking Gate and Door Hook ... 60%
Crown Picture ... 50&10%
Bench Hooks—See *Bench Stops.*
Corn Hooks—See *Knives, Corn.*

Horse Nails—See *Nails, Horse*

Horseshoes—

See *Shoes, Horse.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition ... ft. 4½@ 4½c
3-ply Standard ... ft. 5 @ 6 c
4-ply Standard ... ft. 8 @ 9 c
3-ply extra ... ft. 9 @10 c
4-ply extra ... ft 11 @12 c
Cotton Garden, ¾-in., coupled:
Low Grade ... ft. 6 @7 c
Fair quality ... ft. 8 @9 c

Irons—Sad—

From 4 to 10 ... lb 3@3¼c
B. B. Sad Irons ... lb. 3½@4c
Chinese Laundry ... lb. 5@5½c
Chinese Sad ... lb. 3½@3¼c
Mrs. Potts', per set:

Nos.	*50*	*55*	*60*	*65*
	65@70c	*60@65c*	*75@80c*	*70@75c*

New England Pressing, lb. 3½@3¼c

Soldering—

Soldering Coppers, 1 & 1½ lb., $1 @ 2 lb., and up ... 19@20c
Covert Mfg. Co. ... 20&2½
Smith & Hemenway Co's Sets ... 70%

Pinking—

Pinking Irons ... doz. 50@60c

Jack Screws—See *Screws.*

Jacks, Wagon—

Covert Mfg. Co., Steel ... 45&2½
Covert's Saddlery Works':
Daisy ... 60&10%
Victor ... 60&10%
Lockport ... 40@40&10%
Lane's Steel ... 33⅓&5%

Kettles—

Brass, Spun, Plain ... 20@25%
Enameled and Cast Iron—See *Ware, Hollow.*

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—Butcher, Shoe, &c.—

Foster Bros.' Butcher, &c ... 30%
Hartzell Cutlery Co ... 50&5%
Smith & Hemenway Co ... 40&10%
Hay and Straw—See *Hay Knives.*

Corn—

Ft. Madison Cut-Easy, ₩ doz ... $3.25
Withington Acme, ₩ doz., $2.65; Dent, $2.75; dj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List ... 70&5@70&10%
Adjustable Handle ... 25%
Bradley's ... 35%
Cantelo's Folding ... 50@50&5%
C. E. Jennings & Co. Nos. 45, 46 ... 40&10%
Jennings & Griffin ... 66⅔&5%
Swan's ... 70&10&2½%
Watrous ... 25%
L. & I. J. White ... 20&5@25%

Hay and Straw—

Lightning ... per doz. $5.00@5.25
Iwan's Sickle Edge ... ₩ doz. $10.00
Iwan's Serrated ... ₩ doz., $11.00
Maine ... ₩ doz. $8.50

Mincing—

Buffalo ... ₩ gro. $15.00

Miscellaneous—

Farriers' ... doz. $2.00@3.00
Woosenholm's ... ₩ doz. $3.00@3.25

Knobs—

Base, 2¼-inch, Birch, or Maple, Rubber tip, gro ... $1.90@1.25
Carriage, Jap, all sizes ... gro. 30@33c
Door, Mineral ... doz. 60@65c
Door, Por. Jap'd ... doz. 65@70c
Door, Por. Nickel ... doz. $2.00@2.10
Bardsley's Wood Door, Shutter, &c ... 15%
Picture, Sargent's ... 60&10%

Lacing Leather—

See *Belting, Leather—*

Ladders, Step, Etc.—

Goshen Mfg. Co ... 50%

Ladies– Melting–
L. & C. Mfg. Co. 25%
P. S. & W. 5%
Reading 6%
Sargent's ..... 40@40&10%

Lanterns– Tubular–
Regular Tubular ..... doz. $4.35@4.75
Side Lift Tubular ..... doz. $4.75@5.25
Square Lift Tubular ..... doz. $4.75@5.25
Other Styles ..... 40&10@40&10&5%

Bull's Eye Police–
No. 1, 2¾ inch $3.60
No. 2, 3 inch $4.00

Latches, Thumb–
Roggen's Latches ..... doz. 30@33c

Lawn Mowers–
See *Mowers, Lawn.*

Leaders Cattle–
Small ..... doz. 50c; large, 55c
Covert Mfg. Co. ..... 45&2%

Lemon Squeezers–
See *Squeezers, Lemon.*

Lifters, Transom–
Solid Grip, Payson Mfg. Co. 80%
R. & E. 45%

Lines–

Wire Clothes, Nos...	18	19	20
100 feet	$2.20	2.00	1.65
75 feet	$1.80	1.70	1.30

Ossawan Mills, Crown Solid Braided Chalk ..... 33⅓&5
Mason's, No. 0 to No. 5 ..... 33⅓&5
Samson Cordage Works: Solid Braided Chalk, No. 0 to 8 ..... 40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gr. 30%

Locks– Cabinet–
Cabinet Locks ..... 33⅓@33⅓&7½%

Door Locks, Latches, &c.–
[Net prices are very often made on these goods.]
Reading Hardware Co. 50%
R. & E. Mfg. Co. 20%
Sargent & Co. ..... 40@40&10%

Elevator–
Stowell's 40%

Padlocks–
Wrought Iron ..... 7o&10c&5@30c&5%
R. & E. Mfg. Co. Wrt. Steel and Brass. 50%

Sash, &c.–
Fitch's: Bronze and Brass 66⅔%
Iron 70%
Ives' Patent.: Bronze and Brass 62½%
Iron 65%
Wrought Bronze and Brass ..... 55&5%
Wrought Steel 60%
Payson's Signal 50%
Reading ..... 6c&10&10@70%

Machines– Boring–
Common, Upright, Without Augers, $2.00
Common, Angular, Without Augers, $2.25

Without Augers.	Upright.	Angular.
R. & E. Mfg. Co.:		
Improved No. 3.	$4.25	No. 1 5.00
Improved No. 4.	3.75	No. 2 3.38
Improved No. 5.	2.75	
Jennings'	2.50	3.00
Millers' Falls		5.75
Snell's, Rice's Pat.	2.50	2.75
Swan's, No. 500..	5.10	No. 200 6.45

Hoisting–
Moore's Anti-Friction Differential Pulley Block 30%
Moore's Hand Hoist, with Lock Brake. 30%
Moore's Portable Pneumatic Hoist.... 25%

Ice Cutting–
Chandler's 15%

Washing–
Wayne American ..... ₩ doz. $28.00
Western Star, No. 2 ..... ₩ doz. 28.00
Western Star, No. 3 ..... ₩ doz 30.00
St. Louis, No. 41 ..... ₩ doz. 60.00

Mallets–
Hickory ..... 45&5@50%
Lignumvitæ ..... 45&5@50%
Tinners', Hickory and Applewood, doz. ..... 60@55c

Mats– Door–
Elastic Steel (W. G. Co.) 10%

Mattocks–
See *Picks and Mattocks.*

Meat Cutters–
See *Cutters, Meat.*

Milk Cans– See *Cans, Milk*

Mills– Coffee–
Enterprise Mfg. Co. ..... 25@30%
National, list Jan. 1, '94 ..... 30%
Parker's Columbia and Victoria ..... 50&10@60%
Parker's Box and Side ..... 50&10@60%
Swift, Lane Bros. 30%

Mincing Knives–
See *Knives, Mincing.*

Molasses Gates–
See *Gates, Molasses.*

Money Drawers–
See *Drawers, Money.*

Mowers Lawn–
Net prices are generally quoted.
Cheap ..... *all sizes, $1.90@1.95*
Good ..... *all sizes, $2.25@2.50*

	10	12	14	16-inch
High Grade	4.25	4.50	4.75	5.00

Continental ..... 60&10&5%
Great American ..... 70&5%
Great American Ball Bearing... 60&10&5%
Quaker City ..... 70&5%
Pennsylvania ..... 60&10&5%
Pennsylvania Golf 50%
Pennsylvania Horse 40%
Pennsylvania Pony 45%
Philadelphia:
Styles M., S., C., K., T. ..... 70&5%
Style A, all Steel ..... 65&10%
Style F, Low Wheel ..... 60&10%
Style E, High Wheel ..... 70&10&5%
Drexel and Gold Coin, low list... 50&5%

Nails–
Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered. List July 20, 1899 .85&10@85&10&10%
Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse–

Nos.	6	7	8	9	10	
A. C.	25¢	23¢	22¢	21¢	21¢	40&5%
Ausable	28¢	26¢	25¢	24¢	23¢	50&10%
Capewell	19¢	18¢	17¢	16¢	16¢	10&5%
C. B. K.	25¢	25¢	22¢	21¢	21¢	40%
Champ'n	28¢	26¢	25¢	24¢	23¢	40&10&5%
Clinton	19¢	17¢	16¢	15¢	14¢	30&10&5%
Maud S.	25¢	23¢	22¢	21¢	21¢	50%
Putnam	23¢	21¢	20¢	19¢	18¢	33⅓%
Vulcan	23¢	21¢	20¢	19¢	18¢	25&10%
American, Nos. 6 to 10 ₩ ₥						9@9½¢
Neponset	Nos. 5 to 10¢ ₩ ₥ 12¢					
Jobbers' special brands						*per lb. 8@9c*

Picture

	1½	2	2½	3	3½ in.
Brass Head	.45	.60	.70	.95	1.00 gro.
Por. Head	..	1.10	1.10	1.10	.. gro.

Nippers, See *Pliers and Nippers.*

Nut Crackers–
See *Crackers, Nut.*

Nuts–
Cold Punched: Off list.
Mfrs. or U. S. Standard.
Square, plain ..... $5.00@5.10
Hexagon, plain ..... $5.30@5.40
Square, C. T. & R. ..... $5.20@5.30
Hexagon, C. T. & R. ..... $5.80@5.90
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square Blank ..... $5.20@5.30
Hexagon Blank ..... $5.50@ .90
Square Tapped ..... $5.00@5.10
Hexagon Tapped ..... $5.60@5.70

Oakum–
Best or Government ..... lb. 6¼c
Navy ..... lb. 5 c
U. S. Navy ..... lb. 5¼c
Plumbers' Spun Oakum 8¾c
In carload lots ¼c lb. off f.o.b. New York.

Oil Axle–
Snow Flake: 1 pt. cans, per doz. $3.00
1 qt. cans, per doz. $4.80
1 gal. cans, per doz. $15.00
5 gal. cans, per doz. $66.00
} 33⅓&10%

Oil Tanks–See *Tanks, Oil.*

Oilers–
Brass and Copper ..... 40&10%
Tin or Steel ..... 60&10%
Zinc ..... 60&10%
Paragon:
Brass and Copper ..... 40&10%
Tin or Steel ..... 60&10%
Zinc ..... 60&10%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₩ doz. 20%
Malleable, Hammers' Old Pattern, same list ..... 50&10%
Wilmot & Hobbs Mfg. Co:
Spring Bottom Cans ..... 70@70&10%
Railroad Oilers etc. ..... 60@60&10%

Openers– Can–
French ..... doz. 35c
Iron Handle ..... doz. 25@27c
Sprague, Iron Hdle. .. per doz. 35@40c
Sardine Scissors .. doz. $1.75@$3.00
Tip Top ..... per doz. $0.75
National, ₩ gro. ..... $1.75@$2.00
Stowell's ..... per doz. 35@45c
Waldorf, ₩ gro. $3.65

Egg–
Nickel Plate ..... per doz., $2.25
Silver Plate ..... per doz., $3.50

Packing–
Asbestos Packing, Wick and Rope, 15@15½c lb.

Rubber–
Sheet, C. I. ..... 8@12c
Sheet, C. O. S. ..... 9@13c
Sheet, C. B. S. ..... 10@14c
Sheet, Pure Gum ..... 50@70c
Sheet, Red ..... 35@40c
Jenkins' Standard, ₩ ₥ 80¢ ... 30@35&5%

Miscellaneous–
American Packing ..... 7@10c lb.
Cotton Packing ..... 13@14c lb.
Italian Packing ..... 9@15½c lb.
Jute ..... 3½@4c lb.
Russia Packing ..... 7@11c lb.

Pails– Creamery
B. & C., with gauges.. No 1 $6.50; No. 2, $5.75 ₩ doz.

Galvanized–
Price per gro.

Quart	10	12	14
Water, Regular ..	18.00	21.00	24.00
Water, Heavy	24.00	27.00	30.00
Fire, Rd. Bottom.	31.00	33.00	35.00
Well	27.00	29.00	31.00

Pans– Dripping–
Standard List ..... 50¢ 10@50&20%

Fry–
Common Lipped:

No.	1	2	3	4	5
Per doz.	$0.60	.75	.85	.95	1.15

Roasting and Baking–
Regal, S. S. & Co., ₩ doz. Nos. 5, $4.50; 10 $5.00; 20, $5.50; 30, $6.00
Simplex, ₩ gro., No. 40 $30.00; 50, $34.50; 60 $39 00; 140, $33.00; 150, $37.50; 160, $43.00.

Paper–Building Paper–

Asbestos:	lb.
Building Felt	3c
Mill Board, sheet, 40 x 40 inches	4c
Mill Board, roll, thicker than 1-16 inch	3c
Mill Board, roll, 1-16 in. thick and less	3c

	Per roll
Rosin Sized Sheathing:	*500 sq. ft.*
Light wt., 20 lbs. to roll	$0.32
Medium wt., 30 lbs. to roll	$0.47
Heavy wt., 40 lbs. to roll	$0.58
Medium Grades Water Proof Sheathing	$0.65@1.25
Deafening Felt, 2, 6 and 4½ sq. ft. to lb., ton	$40.00@42.00
Red Rope Roofing, 250 sq. feet per roll	$1.05

Tarred Paper.
1 ply (roll 500 sq. ft.), ton .. $38.00@$0.00
2 ply, roll 108 sq. ft. ..... 4c@45c
3 ply, roll 108 sq. ft. ..... 60@65c
Slater's Felt (roll 500 sq. ft.) .. 50@55c
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.) $2.75

Sand and Emery–
List Dec. 23, 1899 ..... 60@60&5%

Parers– Apple–
Advance ..... ₩ doz. $4.50
Baldwin ..... ₩ doz. $5.00
Bonanza ..... each $5.00
Dandy ..... each $7.50
Eureka, 1898 ..... each $16.00
Family Bay State ..... ₩ doz. $12.00
Hudson's Little Star ..... ₩ doz. $4.00
Hudson's Rocking Table ..... ₩ doz $5.50
Improved Bay State ₩ doz. $27.00@30.00
New Lightning ..... ₩ doz. $5.50
Reading 72 ..... ₩ doz. $4.00
Reading 78 ..... ₩ doz. $7.00
Turn Table '98 ..... ₩ doz. $5.50
White Mountain ..... ₩ doz. $4.00

Potato–
Saratoga ..... ₩ doz. $5.50
White Mountain ..... ₩ doz. $4.50

Paris Green– per lb.
Arsenic keys or casks ..... 11 @11½c
Kegs, 100 to 175 lbs. ..... 11½@12 c
Kits, 14, 28, 56 lbs. ..... 12½@13 c
Paper boxes, 2 to 5 lbs. ..... 12½@13 c
Paper boxes, 1 lb. ..... 13 @13½c
Paper boxes, ½ lb. ..... 14 @14½c
Paper boxes, ¼ lb ..... 15 @15½c

Picks and Mattocks–
List Feb. 25, 1899 ..... 70@70c&10%

Pigeons– Clay
Markle's Black Birds, f.o.b. factory, per M $3.75
See also *Traps, Target.*

Pinking Irons–
See *Irons, Pinking.*

Pins– Escutcheon–
Brass 60%
Iron, list Nov. 11, '95 ..... 60%

Pipe, Cast Iron Soil–
Standard, 2-6 in. ..... 60c&7½%
Extra Heavy, 2-6 in. 70%
Fittings ..... 75c&5%

Pipe, Merchant, Boiler Tubes, &c.–

Merchant Pipe.	Black.	Galvanized
⅛ to ½ inch	61%	48%
¾ to 10 inch	68½%	56%
Boiler Tubes.		*Up to*
Steel.		*22 feet*
1 to 1¼ inch and 2¾ to 5 inch inclusive		65½%
2 to 2½ inch, inclusive		60%
6 to 10 inches		59%
Iron.		
1 to 1½ inch and 2½ in.		43½%
1¾ to 2¼ inch		43%
2¾ to 12 inch		5%
Casing, Cut Lengths.		*S. & S.*
2 to 8 inch		63½%
3¼ to 4 inch		59%
4½ to 12½ inch		61½%

Pipe, Sewer–
Standard Pipe and Fittings, 2 to 24 in.
New England 70%
New York and New Jersey 75%
Ohio and Michigan 80%
Carload lots are generally delivered.

Planes and Plane Irons–
Wood Planes–
Molding ..... 40@2½@40@40&10%
Bench, First quality ..... 45c&10@45c&10&5%
Bench, Second quality ..... 60c&10@50c&10&5%
Bailey's (Stanley R. & L. Co) ..... 25&10@25&10&10%
Gage Self Setting 35%

Iron Planes–
Bailey's (Stanley R. & L. Co) ..... 25&10@25&10&10%
Chaplin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10@25&10&10%
Sargent's ..... 50&10&10%

Plane Irons–
Wood Bench Plane Irons ..... 30c&5@30c&10c&5%
Buck Bros. 30%
Stanley R. & L. Co... 20&10@20&10&10%
L. & J. White ..... 20&5@25%

Planters, Corn, Hand.
Kohler's Eclipse ..... ₩ doz. $9.00

Plates–
Felloe ..... lb 3¾@4c
Self-Sealing Pie Plates (S. S. & Co.), ₩ doz. $2.00 ..... 50%

Pliers and Nippers–
Button Pliers ..... 70c&10@75&
Gas Burner, per doz., 5 in., $1.15@ $1.20; 6 in., $1.35@$1.45
Gas Pipe.. 7 8 10 12-in.
$1.75 $2.00 $2.75 $3.75
Acme Nippers ..... 50@50&5%
Bernard's:
Parallel Pliers, &c. 35%
Paragon Pliers ..... 50&5%
Lodi Pliers ..... 50&5%
Elm City Fence Pliers 35%
Cronk Hanger Co.:
American Button ..... 75&10%
Cronk's 60%
Improved Button ..... 70&10%
Stub's Pattern 50%
Combination and others 25%
Heller's Farriers' Nippers, Pincers, and Tools 50@50&5%
P., S. & W. Tinners' Cutting Nippers, 30@30&10%
Swedish Side, End and Diagonal Cutting Pliers 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels–
Plumbs and Levels ..... 75@75c&10%
Davis Iron, Machinist No. 1 to 14.... 20%
Davis Iron, Adjustable No. 6 to 49.... 35%
Disston's 70%
Pocket Levels ..... 75&10c&10@75&10%
Stanley R. & L. Co. ..... 40@40&10&10%
Stanley's Duplex ..... 20@20&10&10%
Woods' Extension 33⅓%

Poachers, Egg–
Buffalo Steam Egg Poachers, ₩ doz. No. 1, $7.20; No. 2, $11.00 No. 3, $11.00; No. 4, $14.50 ..... 50%

Points, Glaziers'–
Bulk and 1 lb. papers .. lb. 8 c@..
½-lb. papers ..... lb. 8½c@..
¼-lb. papers ..... lb. 9 c@..

Pokes, Animal–
Ft. Madison Hawkeye ..... ₩ doz. $3.25
Ft. Madison, Western ..... ₩ doz. $3.75

Police Goods–
Manufacturers' Lists ..... 25@25&5%
Tower's 25%

Polish–Metal–
Prestoline Liquid, No. 1 (½ pt.), ₩ doz. $3.00; No. 2 (1 qt.), $9.72 ..... 40%
Prestoline Paste ..... 40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₩ doz. 50¢; ₩ gr. $4.50; ½ ₥ boxes, ₩ doz. $1.25; 1 ₥ boxes, ₩ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₩ doz. $1.25; ₩ gr. $12.00.
Barkeepers' Friend Metal Polish, ₩ doz. $1.75; ₩ gr. $18.00.
Wynn's White Silk, ¼ pt. cans, ₩ doz. $2.00

Stove–
Black Eagle Benzine Paste, 5 ₥ cans .. ₩ ₥ 10¢
Black Eagle, Liquid, ½ pt. cans. ₩ doz. 75¢
Black Jack Paste, ¾ ₥ cans. ₩ gro. $9.00
Ladd's Black Beauty, gr. $10.00 ..... 50%
Joseph Dixon's, ₩ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ₩ ₥ 8¢
Fireside ..... ₩ gr. $2.50
Gem, ₩ gr. $4.50 ..... 10%
Japanese ..... ₩ gr. $3.50
Jet Black ..... ₩ gr. $3.50
Peerless Iron Enamel, ½ pt. cans. ₩ doz. $1.50
Wynn's:
Black Silk, 5 ₥ pail ..... each 70¢
Black Silk, ½ ₥ box ..... ₩ doz. $1.00
Black Silk, 5 oz. box ..... ₩ doz. $0.75
Black Silk, ½ pt. liq. ..... ₩ doz. $1.00

Poppers, Corn–
Round or Square:
1 qt. ..... gro. $7.00@$7.50
1½ qt. ..... gro. 9.50@ 10.00
2 qt. ..... gro. 10.50@ 11.00

Post Hole and Tree Augers and Diggers–
See also *Diggers, Post Hole, &c.*

Potato Parers–
See *Parers, Potato.*

Pots– Glue–
Enameled 45%
Tinned 40%

Powder–
In Canisters:
Duck, ½ lb. each 45c
Fine Sporting, 1 lb. each 75c
Rifle, ½-lb. each 15c
Rifle, 1-lb. each 25c
In Kegs:
Duck, 6½-lb. kegs $2.25
Duck, 12½-lb. kegs $4.25
Duck, 25-lb kegs $8.00
Rifle, 6½-lb kegs $1.25
Rifle, 12½-lb. kegs $2.25
Rifle, 25-lb. kegs $4.00
King's Semi-Smokeless:

	Shot Gun	Rifle
Keg (25 ₥ bulk)	$12 00	$15.00
Half Keg (12½ ₥ bulk)	6.25	7.75
Quarter Keg (6¼ ₥ bulk)	3.25	4.00
Case 24 (1 ₥ cans bulk)	14.00	17 00
Half case 12 (1 ₥ cans blk)	7.25	8 75

King's Smokeless: Keg (25 ₥ bulk) $6.50
Half Keg (12½ ₥ bulk) $3.50
Quarter Keg (6¼ ₥ bulk) $1.90
Case 24 (1 ₥ cans bulk) $8.50
Half case (1 ₥ cans bulk) $4 50

Presses–
Fruit and Jelly–
Enterprise Mfg. Co. ..... 20@25%

Pruning Hooks and Shears–See *Shears.*

Pullers, Nail–
Cyclops ..... 40@40&10%
Miller's Falls, No. 3, per doz. $12.00 ..... 15&10%
Pelican, ₩ doz. $9.00 ..... 40&10%
Samson ..... ₩ doz. $18.00
Scranton, Case Lots:
Smith & Hemenway Co.:
Diamond B, No. 2, ca e lots ₩ doz $6.00
Diamond B, No. 3, case lots, ₩ doz $5.50
Giant, No. 1, ₩ doz. $18; No. 2, $16.50; No. 3, $15 ..... 40%
No. 1 (large), ₩ doz. $5.50; No. 2 (large), $5.75; No 3 (small), $5.00; No. 2-B (large), $5.50; No. 3-B (small), $5.00; No. 2-D (large), $4 50; No 3-D (small) $4 00.

Pulleys–Single Wheel–

Inch	2	2½	3
Awning .. doz.	$0.45	.70	.85
Inch	2	2¼	2½
Hay Fork, Swivel or Solid Eye		*doz.*	*$1.35@1.50*
Hot House, doz		$0.65	.90	1.20
Inch	1¼	1½	1¾	2
Screw ..... *doz.*	$0.15	.20	.25	.30
Inch	1¾	2	2¼	2½
Side ..... *doz.*	$0.30	.40	.55	.60
Inch	1½	1¾	2	2½
Tackle .... *doz.*	$0.30	.45	.65	1.10

Stowell's:
Ceiling or End, Anti-Friction 60%
Dumb Waiter, Anti-Friction... 60&10%
Hay Fork, Anti-Friction, 5-in. Wheel, ₩ doz. $12.00 ..... 50%
Electric Light 60%
Side, Anti-Friction ..... 60&10%

Sash Pulleys–
Common Frame; Square or Round End per doz., 1¾ in., 15c.; 2 in., 16c
Auger Mortise, no Face Plate, per doz. 1¾ in., 12c.; 2 in., 15c.
Auger Mortise, with Face Plate, per doz., 1¾ in., 15c.; 2 in., 15½c.

Acme.....1¼ in., 16¢; 2 in., 19¢
Common Sense, 1¼ in.... ₱ doz., 18¢; 2 in., 20¢.
Fox-All-Steel, Nos. 3 and 7, 2¼ in.....
₱ doz. 25¢
No. 9, 1¾ in.....₱ doz. 20¢
Extra for Plated Finish...₱ doz. 20¢
Extra for Anti-Friction Bronze Bushing.....₱ doz 10¢
Grand Rapids All Steel Noiseless....40%
Ideal No. 13.....1¾ in.. ₱ doz.. 16¢
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy....1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern.....60@60&10%
Pitcher Spout.....75@75&10%
Wood.....50@50&10%
Pump Leathers, Lower and Plunger Valves—Per gro.:

Inch..	2	2¼	2½	2¾
	$2.20	2.50	2.75	3.00
Inch..	3	3¼	3½	3¾	4
	$3.20	3.60	3.85	4.10	4.50

Barnes Dbl. Acting (low list)..... 50%
Flint & Walling's Fast Mail (low list).50%
Flint & Walling's Pitcher Spout.....75%
Loud's Suction Pumps, U. S. Co.....20%
Myer's Pumps, low list 50%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co.....30%

Punches—

Revolving (4 tubes)...doz. $3.75@4.25
Saddlers' or Drive, good...doz. 65@70c
Spring, single tube, good quality... $1.65@1.75
Bemis & Call Co.'s Cast Steel Drive....50%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches .....55&10%
Steel Screw, B & K. Mfg. Co.....40%
Tinners' Hollow, P., S. & W. Co..... 35@35&5%
Tinners' Solid, P., S. & W.Co., ₱ doz., $1.44.....60%

Rail— Barn Door, &c.—

Cast Iron, Barn Door: Flange Screw Holes for Rd. Groove Wheels:

⅛	⅝	¾ In.
$1.70	$2.10	$5.00 100 feet.

Angular for Sq. Groove Wheels:

Small.	Med.	Large.
$1.60	1.95	2.70 100 feet.

Sliding Door, Brnzed Wr't Iron, fl, 6½c
Sliding Door, Iron Painted....2½@3c
Sliding Door, Wrought Brass, 1¼ in..... lb. 36c..50%
Cronk's Double Braced Steel Rail, ₱ foot.....8¼¢
Cronk's O. N. T. Rail.....8¼¢
Lanes' O. N. T., ₱ 100 ft., 1 inch....$2.85
Lanes' Standard, ₱ 100 ft.....3.75
Lawrence Bros.' .....₱ ft. 4¼¢
McKinney's None Better.....₱ ft. 3¾¢
McKinney's Standard.....₱ ft. 4 ¢
Stowell's Cast Rail .....1½¢
Stowell's Steel Rail, Plain.....25%
Stowell's Wrought Bracket, Plain....8¼¢

Rakes—

Net Prices, Malleable Rakes:

	10	12	14	16-tooth
Shank	$1.50	1.60	1.75	1.85
Socket	$1.65	1.80	1.95	2.10

Sept. 1, 1900, List:
Cast Steel.....70@5&2%
Malleable.....70@10@75&5%
Lawn Rakes, Metal Head, per doz., 20 teeth.....$3.25@3.50
24 teeth.....$3.60@3.75
Fort Madison Red Head Lawn.....$3 25
Fort Madison Blue Head Lawn.....$3.00
Jackson Lawn, 20 and 30 teeth..... ₱ doz. $4.00
Kohler's:
Lawn Queen, 20-tooth, ₱ doz.....$3.60
Lawn Queen, 24-tooth, ₱ doz.....$3.75
Paragon, 20-tooth, ₱ doz.....$2.85
Paragon, 24-tooth, ₱ doz.....$3.00
Steel Garden, 14-tooth, ₱ doz.....$3.00
Malleable Garden, 14-tooth ₱ doz. $2.25

Rasps, Horse—

Disston's.....75%
Heller Bros.....70&5%
McCaffrey File Co. Horse Rasps.60&10&5%
New Nicholson Horse Rasp.....70&10%
See also *Files.*

Razors—

Boracic.....70%
Fox Razors, No. 42,..₱ doz. $20.00 } 40%
Fox Razors, No. 44,..₱ doz. $24.00 } dis
Fox Razors, No. 82, Platina, ₱ doz $24.00
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 99.....$12.00
All other Razors.....40%
Safety Razors.....40%

Razor Strops—

See *Strops, Razor.*

Reels— Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes.....25%
Hendryx Single Action Series, 102P and PN, 204P and PN, 102 PR and PRN, 902 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor.50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 00290&PN, 0924 and 0924N, 5009N and PN.....40&10%
Shakespeare, Style C.....25%

Registers—

List Sept. 2, 1901.

Black Jap } 60¢10&5%
White Jap } 60¢10&5%
Bronzed } 60¢10&5%
Nickel Plated } 60¢10&5%
Electro Plated } 60¢10&5%

There is a good deal of irregularity in prices of Registers, especially in Black Japanned, and some jobbers and manufacturers are using the old list.

Revolvers—

Single Action.....85@90c
Double Action, except 44 calibers..$1.50
Double Action, 44 calibers.. ....$1.65
Automatic $1.10
Hammerless.....$2.60

Riddles, Grain or Sand—

16 in. per doz.....$2.00@2.25
17 in. per doz.....$2.25@2.50
18 in. per doz.....$2.50@2 75

Rings and Ringers—

Bull Rings—

	2	2½	3 Inch.
Steel	$0 80	0.90	0.95 doz.
Copper	1.10	1.20	1.50 doz.

Hog Rings and Ringers—

Hill's Rings....gro. boxes, $4.00@4.50
Hill's Ringers, Gray Iron, doz. 50@55c
Hill's Ringers, Mal. Iron, doz. 75@80c
Blair's Rings.....per gro. $5.75@6.00
Blair's Ringers...per doz. $0.65@ .70
Brown's Rings.....per gro. $6.00@6.25
Brown's Ringers..per doz. $1.00@1.10
Rapid Rings.....₱ gro. $6.00
Rapid Ringers.....₱ doz. $3.50

Rivets and Burrs—

Copper.....50@50&10@10&5%
Iron or Steel:
Tinners' .....70@70&10%
Miscellaneous .....70@70&10%

Rivet Sets—See *Sets*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....50&10&10%
Cronk's Stay.....66⅔%
Cronk's Brinkerhoff.....66⅔%
Lane's, Stay 33⅓%
Stowell's Barn Door Stay...₱ doz. $1.25

Rope—

Manila, 7-16 in. and larger lb. 13¼@13 c
Manila.....¾-inch.....lb. 13¼@13½c
Manila ¼ & 5-16 in.....lb. 13¾@14 c
Manila, Tarred Rope, 15 thread.....lb. 12¾@13 c
Manila Hay Rope. Medium.....lb. 12¾@13 c
Sisal, 7-16 in. and larger lb. 8½@ 9¼c
Sisal.....⅜-inch..lb. 9 @ 9¾c
Sisal, ¼ and 5-16 in. ...lb. 9½@10¼c
Sisal, Hay Rope, 2 to 10 ply.....lb. 8¾@ 9¼c
Sisal, Tarred, Medium Lath Yarn.....lb. 8¼@ 8¾c
Cotton Rope: Best.. ....¼-in. and larger lb. 13½c
Medium ..¼-in. and larger lb. 11 c
Com.....¼-in. and larger lb. 9 c
Jute Rope: Thread No. 1, ¼-in. and up lb. 6½c
Thread No. 2, ¼-in. and up lb. 6 c
Yarn, ¼ in. and up..... lb. 5 c

Wire Rope—

Galvanized .....25&7½%
Plain.....30&7½%

Ropes, Hammock—

Covert Mfg. Co.....45&2%
Covert Saddlery Works.....60&5%

Rules—

Boxwood.....60@60&10%
Ivory .....35&10@35&10&10%
Chapin-Stephens Co.:
Boxwood.....60@60&10%
Ivory.....35&10@35&10&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber .....50&10%
Stanley R. & L. Co.:
Boxwood.....60@60&10%
Ivory.....35@35&10&10%
Upson Nut Co.:
Boxwood.....60@60&10%
Ivory.....35&10@45&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers Sausage.*

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins:
Circular.....50@50&10%
Band .....50@10@60%
Cross Cuts .....35&5%
Mulay, Mill and Drag .....50&10%
One-Man Saw.....40%
Wood Saws 40%
Hand, Compass, &c.....40%
Disston's:
Circular Solid and Inserted Tooth.50%
Band 2 to 14 in. wide.....60%
Band ¼ to 1¾.....70%
Crosscuts.....45@45&10%
Narrow Crosscuts.....50@50&10%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....35@35&7½%
Woodsaw Blades.....40@40&7½%
Woodsaw Rods.....25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8.....25@25&7½%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination.....30@30&7½%
Compass, Keyhole, &c.....25@25&7½%
Butcher Saws and Blades..35@35&7½%
C. E. Jennings & Co.'s.:
Back Saws.....25%
Butcher Saws.....35%
Compass and Key Hole Saws.....25%
Framed Wood Saws.....40%
Hand Saws.....25@30%
Wood Saw Blades.....45%
Peace:
Circular and Mill 50%
Cross Cuts, list Jan. 1, '99.....50%
Hand, Panel and Rip.....30%
Richardson:
Circular and Mill 50%
Hand, &c.....30%
X Cuts, list Jan. 1, '99.....50%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws..50%
Band Saws... .....50%
Back Saws.....25@25&7½%
Butcher Saws.....35@35&7½%
Hand Saws.....25@25&7½%
Compass, Keyhole, &c .....25@25&7½%
Wood Saws .....35@35&7½%

Hack Saws—

Disston:
Concave Blades.....25%
Keystone.....30%
Hack Saw Frames.....30%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180, 330.....40%
Hack Saws, Nos. 175, 180, 330, complete.....40%
Griffin's Hack Saw Frames 45%
Griffin's Hack Saw Blades.....45%
Star Hack Saws and Blades.....15&10%

Scroll—

Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

Scale Beams—See *Beams, Scale.*

Scales—

Family, Turnbull's.....30@30&10%
Counter:
Hatch, Platform, ¼ oz to 5 lbs. doz $5.50
Two Platforms, ½ oz to 8 lbs. doz. $16
Union Platform, Plain...$1.70@1.90
Union Platform, Striped $1.85@2.15
Chatillon's:
Eureka.....25%
Favorite.....40%
Grocers' Trip Scales.....50%
Pelouze Scales—Household, Counter, Confectionery, Postal, Ice, &c.....50%
"The Standard" Portables 45%
"The Standard" R. R. and Wagon....50%

Scrapers—

Box. 1 Handle .....doz $2.25@2.50
Box. 2 Handle.....doz. $3.75@4.00
Ship, No 1. doz. $3 50; No 2. $2 25@2.40
Adjustable Box Scraper (S. R. & L. Co.) $3.00.....30@30&10%

Screens, Window, and Frames—

Bonanza Window Screens.....60@60&5%
Cortland Victor Screens .....60@60&5%
River Pattern Window Screen.60@60&5%
Maine Window Screen Frames.40&10&5%
Perfection Window Screens....60@60&5%
Phillips' Window Screen Frames..... 60&10&5%
Porter's Hummer Window Screens.. 60@60&5%
Porter's Klondike Window Screens .... 60&2½@60&7½%
Wabash Spring Adj. Screen. 50%
See also *Doors.*

Screw Drivers—See *Drivers, Screw.*

Screws—Bench and Hand—

Bench, Iron..doz. 1 in., $3.00@3.25; 1¼, $3.50@3.75; 1½, $4.00@4.50
Bench, Wood, Beech..doz. $3.50@3.75
Hand, Wood.....50&5@40%
Hand, R. Bliss Mfg. Co.....35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99.....75&5@..%
Coach and Lag, Gimlet Point, list Oct. 1, '99.....75@....%
Hand Rail, list Jan. 1, '81.60&10@....%

Jack Screws—

Standard List.....75@75&10%
Millers Falls.....50&10&10%
Millers Falls, Roller .....50&10%
P., S. & W.....50&50&5%
Sargent.....70&10%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron.50@50&10%
Flat or Round Head, Brass50@50&10%

Set and Cap—

Set (Iron or Steel) .....70&10&10%
Sq. Hd. Cap.. .....65&10&10%
Hex. Hd. Cap.....65&10&10%
Rd. or Fillister Hd. Cap...60&10&10%

Wood—

List Jan. 1, 1900.
Manufacturers' printed discounts:
Flat Head, Iron.....87½@90%
Round Head, Iron.....85@87½%
Flat Head, Brass .....85@87½%
Round Head, Brass.....82½@85%
Flat Head, Bronze..... 75@80%
Round Head, Bronze.....72½@77½%
Drive Screws.....87½@90%
NOTE.—*Extra 5@10% often given.*

Scroll Saws—See *Saws, Scroll.*

Scythes—*Per doz.*

Clipper Pattern, Grass.....$4.25
Full Polished Clipper.... .....$4.75
Grain $7.00
Clipper, Grain.....$7.50
Wood and Bush $4.50

Scythe Snaths—See *Snaths, Scythe.*

Seeders— Raisin—

Enterprise.....25@30%

Sets— Awl and Tool—

Brad Awl and Tool Sets:
Wood Hdle., 10 Awls doz. $2.00@2 25
Wood Hdle., 14 Awls, 6 Tools.... doz. $3.50@3.60
Aiken's Sets, Awl and Tools:
No. 20, ₱ doz. $10.00.....50&10&10%
Fray's Adj. Tool H dls...Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior: No. 1, $7.50; No. 2 $4.00; No. 3, $5.50..... .....30@30&10&10%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe, ₱ doz.....$9.00

Nail—

Square.....per gro. $2.50
Round, Blk. and Pol., assorted..... gro. $1.80@2.50
Octagon.....gro. $4.25@4.75
Knurled, Good.....gro. $5.00@5.50
Buck Brothers.....27½%
Cannon's Diamond Point, ₱ gr. $12...35%
Mayhew's.....per gro. $2.00
Snell's Corrugated, Cup Pt. per gro. $7.50
Snell's Knurled, Cup Pt....per gro $7.50

Rivet—

Regular list.....70@70&10&5%

Saw—

Aiken's:
Genuine.....₱ doz. $5.50@6.00
Imitation .....₱ doz. $3.00@3.10
Atkin's.:
Criterion.....40%
Adjustable.....40%
Bemis & Call Co's.:
Cross Cut.....30%
Hammer, new Pat.....45%
Plate.....30%
Spring Hammer.....30%
Disston's Star and Monarch.....35%
Morrill's No. 1, $15.00.....40&20%
Nos. 3 and 4, Cross Cut, $23...50&20&5%
No. 5, Mill, $31.00.....50&30&10%
No. 10, $15.50.....40&20%
No. 11, $16.00.....40&20%
Taintor Positive, ₱ doz. $18 .....60%

Sharpeners Knife—

Chicago Wheel & Mfg. Co.....65%
Smith & Hemenway Co.....70&5%
Tanite Mills ₱ gross, $14.40....25@33⅓%

Sharpeners Skate—

Eureka Skate Sharpener.....₱ doz. $2.00

Shaves, Spoke—

Iron.....doz. $1.00@1.95
Wood.....doz. $1.75@2.00
Bailey's (Stanley R. & L. Co.)..... 50&50&10&10%
Goodell's, ₱ doz. $9.00.....15&10%

Shears—

Cast Iron...	7	8	9 in.
Best	$16.00	18.00	$20.00 gro.
Good	$13.00	15.00	17.00 gro.
Cheap	$5.00	6.00	7.00 gro.

Straight Trimmers, &c.:
Best quality, Jap.....70@70&10%
" Nickel.....60@60&10%
Fair qual. Jap.....80@80&5%
" Nickel.....75@75&10%
Tailors' Shears.....40@40&10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailors' Shears.....40%
Wilkinson's Hedge.....50%
Wilkinson's Sheep.....1900 list, 50%

Tinners' Snips—

Steel Blades.....20&10%
Steel Laid Blades .....40&10%
Forged Handles, Steel Blades, Berlin.. 40@40&10%
Jennings & Griffin Mfg. Co's. 7 to 10 inch.....50%
Niagara Snips.....40%
P. S. & W. Co.....20%

Pruning Shears and Tools—

Cronk's Grape Shears.....33⅓%
Cronk's Pruning Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25@25&10%
Disston's Pruning Hook, ₱ doz. $12.00 .....25@25&10%
John T. Henry Mfg. Company:
Pruning Shears, all grades...40@40&5%
Orange Shears.....50&10@50&20%
Grape.....40&10@50%
Tree Pruners.....75%
Nagley's Pruning Shears.....10&5%
P., S. & W. Co.....33⅓%

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller Hatfield's, Sargent's list, 75&10&10%
Reading.....70&10@75%
R. & E. list.....33⅓%
Wrightsville, Hatfield Pattern.....50%

Sliding Shutter—

Reading list.....70&10@75%
R. & E. list.....33⅓%
Sargent's list.....50&16⅔&10%

Shells— Shells, Empty—

Brass Shells, Empty:
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge.. 65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Smokeless, 10, 12, 16 and 20 gauge, 33⅓&10%
Blue Rival, New Climax, Primrose Club, Yellow Rival, 10, 12, 16 and 20 gauge.....15%
Climax, Club, League, Rival, 14, 16 and 20 gauge ($7.50 list).....20&5%
Climax, Club, League, Rival 10 and 12 gauge.....25&5%
Defiance, High Base, New Victor, Nitro, Repeater, 10, 12 16 and 20 gauge.....15%
Trap and Metal Lined, 10, 12, 16 and 20 gauge.....33⅓&10&5%

Shells, Loaded—

Loaded with Black Powder.....40&5%
Loaded with Smokeless Powder, medium grade..... 40&10&5%
Loaded with Smokeless Powder, high grade. .....40&10&10&5%

Shoes, Horse, Mule, &c.—

F. o. b., Pittsburg.

Iron.....per keg $3.60
Steel.....per keg 3.35
Burden's, all sizes, ₱ keg..... $3.60

Shot—

Drop, up to B, 25-lb. bag.....$1.35
Drop, B and larger, per 25-lb. bag.. $1.60
Buck, 25-lb. bag.....$1.60
Chilled, 25 lb. bag.....$1.60
Dust Shot, 25-lb. bag.....$2.10
Markle's Chilled.....$1.60
Raymond Chilled.....$1.60

Shovels and Spades—

Association list.....40%
Note.—Common Plain Back Shovels are generally sold by jobbers at $6.75@7.00.

Sieves and Sifters—

Hunter's Imitation, gro. $11.00@11.50
Buffalo Metallic Blued, S. S. & Co., ₩ gr.:
14&16 18&18 18&20
$12.90 $13.80 $15.00
F. J. Meyers' Mfg. Co.:
Eclipse, ₩ gr. $11.00
Electric Light, ₩ gr. $11.00
Hunter's Genuine, ₩ gr. $12.50
No Name, Hunter's, ₩ gr. $11.00
Standard, ₩ gr. $11.00
Shaker (Barler's Pat.) Flour Sifters, ₩ doz., $2.00 30%

Sieves, Tin Rim—

Per dozen

Mesh	14	16	18	20
Black, full size	$0 95	.98	1.00	1.10
Plated, full size	$1.05	1.08	1.10	1.20
Black, scant	$0.78	.80	.83	

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested, doz. $0.65@0 75
Mesh 20, Nested, doz. .75@ .85
Mesh 24, Nested, doz. .90@1.00

Sinks—

Cast Iron—

Standard list 65&10@70..%
NOTE.—*There is not entire uniformity lists used by jobbers.*

Wrought Steel—

New Era, Galv'd and Enameled..70&5%
New Era, Painted 60&10%
L. & G. Mfg. Co., Galvanized 50%
L. & G. Mfg. Co. Enameled 50%

Skeins, Wagon—

Cast Iron 70&10@75%
Malleable Iron 40&10@50%
Steel 40@40&10%

Slates—

Factory Shipments.
"D" Slates 50&10&10&10%
Unexcelled, etc., Noiseless Slates .60 & 8 tens %
Victoria, etc., Noiseless Slates .60& 7 tens &5%
Wire Bound 50&10&5%
Web Hinge 50%

Slaw Cutters—See *Cutters.*

Slicers, Vegetable—

Sterling $2.00 33⅓

Snaps, Harness—

German 40@40&10%
Covert Mfg. Co.:
Derby 35&2%
High Grade 45&2%
Jockey 40&2%
Trojan 45&2%
Yankee 35&2%
Yankee, Roller 30&2%
Covert's Saddlery Works:
Crown 60%
German 60%
Model 60%
Triumph 60%
W. & E. T. Fitch Co.:
Bristol 40&10%
Empire 50&5%
German 40%
National 50&5%
Perfect 45%
Clipper 50&5%
Champion 40%
Security 40%
Victor 60&5%
Oneida Community:
Solid Steel 65@65&10%
Solid Swivel 65&10@65&10&10%
Sargent's Patent Guarded 60%&10%

Snaths—

Scythe 50@50&10%

Snips, Tinners'—See *Shears.*

Soldering Irons—

See *Irons, Soldering.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Silver Plated—

Good Quality 60&10@60&10&5%
Cheap 60@60&10%
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton 40&10%
Rogers & Bro., William Rogers Eagle Brand 50&5%
Anchor, Rogers Brand 60%
Wm. Rogers & Son 60&10%
Simeon L. & Geo. H. Rogers Co.:
Silver Plated Flat Ware 60%
No. 77 Silver Plated Ware 60&10%

Miscellaneous—

German Silver 60&10@60&10&10%
Simeon L. & Geo. H. Rogers Co.:
German or Nickel Silver, Special list 10&10%

Tinned Iron—

Teas per gro, 45@5.c
Tables per gro. 90c@$1.00

Springs—

Door—

Gem (Coil) 20%
Star (Coil) 30%
Torrer's Rod, 39 in., ₩ doz. $1.10@1.25
Victor (Coil) 50&10&10%

Carriage, Wagon, &c.

1¼ in. and Wider:
Black or Bright, lb. 4¼c
Bright, lb. 5¼c
Painted Seat Springs:
1½ x2x 26 and smaller, per pr 48@53c
1½ x 2 x 28 per pr. 56@61c
1½ x 3 x 28 and narrower, per pr. 75@80c
Cliff's Springs:
Bolster 40%
Seat Per pair 50¢
Pole, per pair, ⅝ in. $1 10; ¾ in. $1.25

Sprinklers, Lawn—

Enterprise 25@30%
Philadelphia No. 1, ₩ doz. $12; No. 2, $15; No. 3, $24 30%

Squares—

Nickel plated.... } List Jan. 5, 1900
Steel and Iron... } 70&10@75%
Rosewood Hdl Try Square and T-Bevels 60&10&10@70%
Iron Hdl. Try Squares and T-Bevels. 40&10@40&10&10%
Disston's Try Sq. and T-Bevels 60&10%
Winterbottom's Try and Miter 40&10@40&10&10%

Squeezers—

Lemon—

Wood, Common, gro., No. 0, $5.25 @5.50; No. 1, $6.25@6.50.
Wood, Porcelain Lined:
Cheap doz. $2.00@2.75
Good Grade doz. $3.00@3.50
Tinned Iron doz. $0.75@1.25
Iron, Porcelain Lined doz. $2.90@3.25
Jennings' Star ₩ doz. $1.85@1.90

Staples—

Barbed Blind lb. 6@6½c
Electricians', Association list 80&10&10%
Fence Staples, same price as Barbed Wire. See Trade Report.
Poultry Netting, Staples per lb. 5½@5½c
Grand Crossing Tack Co.'s list 80&10%

Steels, Butchers'—

Dick's 30%
Foster Bros' 30%
Hartzell Cutlery Co. 50&5%
C. & A. Hoffmann's 40%

Steelyards 25@25&10%

Stocks and Dies—

Blacksmiths' 40@40&10%
Gardner Die Stocks No. 1 50%
Gardner Die Stocks, larger sizes 40%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plates 25@30%
Curtis Reversible Ratchet Die Stock 25%

Stone—

Scythe Stones—

Chicago Wheel & Mfg. Co:
Gem Corundum, 10 inch, $3.00 per gro., 12 inch, $10..)
Pike Mfg. Co. 1901 list:

Black Diamond S. S.	₩ gro.	$12.00
Lamoille S. S.	₩ gro.	$11.00
White Mountain S. S.	₩ gro.	$9.00
Green Mountain S. S.	₩ gro.	$6.00
Extra Indian Pond S. S.	₩ gro.	$7.50
No. 1 Indian Pond S. S.	₩ gro.	$7.00
No. 2 Indian Pond S. S.	₩ gro.	$4.50
Leader Red End S. S.	₩ gro	$4.50

Balance of 1901 list 33⅓%

Oil Stones, &c.

Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit 50%
Gem Corundum Axe, Single or Double Grit 55%
Gem Corundum Slips 55%
Gem Corundum Razor Hones 50%
Pike Mfg. Co. 1901 list:

	₩ lb	
Arkansas Stone, No. 1, 8 to 5½ in.	$2.80	
Arkansas Stone, No. 1, 5½ to 8 in.	$3.50	
Arkansas Slips No. 1	$4.00	
Lily White Washita 4 to 8 i	60¢	
Rosy Red Washita, 4 to 8 in	60¢	
Washita Stone, Extra, 4 to 8 in.	50¢	25%
Washita Stone, No. 1, 4 to 8 in.	40¢	
Washita Stone, No. 2, 4 to 8 in.	30¢	
Lily White Slips	90¢	
Rosy Red Slips	90¢	
Washita Slips, Extra	80¢	
Washita Slips, No. 1	70¢	

India Oil Stones (entire list) 25%

Hindostan No. 1, Regular	₩ lb	8¢
Hindostan No. 1 Small	₩ lb	10¢

Axe Stones (all kinds) 33⅓%
Turkey Oil Stones, ex. 5 to 8 in. ₩ lb 80¢
Queer Creek Stones, 4 to 8 in. 30¢
Queer Creek Slips 40¢
Sand Stone 5¢ 40%
Belgian, German and Swaty Razor Hones 40%
Natural Grit Carving Knife Hones, ₩ doz $3.00
Quick Edge Pocket Knife Hones, ₩ doz $3.00
Mounted Kitchen Sand Stone, ₩ doz $1.50
Tanite Mills:
Emery Oil, ₩ doz. $5.00 50@60%

Stoners—

Cherry—

Enterprise 25@30%

Stops, Bench—

Millers Falls 15&10%
Morrill's ₩ doz., No. 1, $10.00 50&20%
Morrill's, No. 2, $11.00 50&10%

Stops, Window—

Ives' Patent 25&5%

Stove Boards—

See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Strainers, Pump—

Diamond Joe Pump Strainers..per doz. 75¢

Straps, Box—

Cary's Universal case lots 20&10%

Stretchers, Carpet—

Cast Iron, Steel Points ...doz. 55@65c
Socket doz. $1.75

Strops, Razor—

Smith & Hemenway Co. 70%

Stuffers, Sausage—

Enterprise Mfg. Co. 25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97 30%

Tacks Brads, &c.—

List Jan. 15, '99.
Carpet Tacks, American 90&25@....%
American Cut Tacks 90&20@....%
Swedes Iron Tacks 90&30@....%
Swedes Upholsterers' Tacks 90&40@....%
Gimp Tacks 90&20@....%
Lace Tacks 90&40@....%
Trimmers' Tacks 90&25@....%
Looking Glass Tacks 70&10%
Bill Posters' and Railroad Tack... 90&40@....%
Hungarian Nails 80&15%
Common and Patent Brads 80&10%
Trunk and Clout Nails 80&5%

NOTE.—*The above prices are for Straight Weights.* *An extra 5% is given Star Weights* ** *and an extra 10&5% on Standard Weights.* ***

Miscellaneous—

Double Point Tacks 90&6 or 7 tens
Steel Wire Brads, R. & E. Mfg. Co.'s list 50&10@60%
See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co. 30-gal. $3.20
Emerald, S. S. & Co. 50-gal., $4.00
Queen City S. S. & Co., 30-gal. $3.50
Queen City S. S. & Co., 50-gal. $4.25

Tapes, Measuring—

American Asses' Skin 40&10@50%
Patent Leather 35@35&5%
Steel 40&10&5%
Chesterman's 25@25&5%
Eddy's Steel 40@40&5%
Eddy's Metallic 33⅓@33⅓&5%
Kenffel & Esser Co., Steel and Metallic, Lower list, 1899 35%
Lufkin's Steel 33⅓@35%
Lufkin's Metallic 30@30&5%

Teeth Harrow—

Steel Harrow Teeth, plain or headed, base per lb 2½c

Thermometers—

Tin Case 80&10@80&10&5%

Ties, Bale—Steel.

Standard Wire 50&10&5%

Ties, Wall—

Cleveland Wire Spring Co.:
Galv. Steel 5-32 x 6½ in. ₩ 1000, $10.00
Galv. Steel 5-32 x 8½ in. ₩ 1000, $11.00
Galv. Steel 5-32 x 11½ in. ₩ 1000 $12.00
Galv. Steel 5 32 x 15½ in. ₩ 1000 $14.00

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

L. & I. J. White 20@20&5%

Saw—

Atkins' Cross Cut Saw Tools 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—

L. & I. J. White 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme doz. $1.15@1.25; gro. $10.50@11.00
Harper, Champion or Paragon doz. $1.25@1.50; gro. $12.00@12 50

Game—

Oneida Pattern 75&10&5@30&5%
Newhouse 45@45&5%
Hawley & Norton 65&5@65&10%
Victor (Oneida Pattern) 75@75&5%
Star (Blake Pattern) 60&5@60&10%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 8½@9c
Mouse, Round or Square Wire doz. $0.85@1.00
American Pattern French Rat and Mouse Traps—
No. 1, Detroit Marty Pattern, ₩ doz. $4.50; in ½ gro. lots, ₩ doz. $4.00
No. 2, Detroit Marty Pattern, ₩ doz. $3.25; in ½ gro. lots, ₩ doz. $3.00
Detroit Marty Pattern Mouse, ₩ doz. $2.00; in ½ gro. lots, ₩ doz. $1.75
Diamond Joe Mouse Traps per doz. 60¢
Diamond Joe Rat Traps per doz. $1.00
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each $1.12½; ₩ doz. $12.00
No. 3, Rat, ₩ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ₩ doz. $4.75; case of 72 $4.25 doz.
No. 4, Mouse, ₩ doz. $3.50; case of 72 $3.75 doz.
No. 5, Mouse, ₩ doz. $2.75; case of 150 $2.25
Schuyler's Rat Killer, No. 1, ₩ gr. $30.00; No. 2, ₩ gr. $30.00; Mouse, No. 3, $18.00 50%

Target—

Markle's, each $5.50

Trimmers, Spoke—

Bonney's Nos. 1 and 2 40%

Trowels—

Disston Brick and Pointing 30%
Disston Plastering 25%
Disston "Standard Brand" and Garden Trowels 40%
Never-Break Steel Garden Trowels, gro. $7.00
Peace's Plastering 30%
Rose Brick and Plastering 25&5%
Woodrough & McParlin, Plastering 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list 50%
Daisy Stove Trucks, Improved pattern ₩ doz. $18.50
Model Stove Trucks ₩ doz. $18.50

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	*$5.00*	*5 50*	*6.00*
Galvanized Wash Tubs (S. S. & Co.):			
No.	1	3	10 20 30
Per doz.	$5 25	6.00	6.75 6.50 7.25 8.00

Twine—

Miscellaneous—

Flax Twine—	*BC*	*B.*
No. 9, ¼ and ½-lb. Balls	*22c*	*24c*
No. 12, ¼ and ½-lb. balls	*18c*	*20c*
No. 18, ¼ and ½-lb. Balls	*16c*	*18c*
No. 24, ¼ and ½-lb. Balls	*15½c*	*17½c*
No. 36, ¼ and ½-lb. Balls	*15c*	*17c*
Chalk Line, Cotton, ½-lb Balls		*22@22½*
Cotton Mops, 6, 9, 12 and 15 lb. to doz		*7@8*
Cotton Wrapping, 5 Balls to lb according to quality		*10¼c@1.*
American 3-Ply Hemp, ¼ and ½-lb. Balls		*15@1.*
American 3 Ply Hemp, 1-lb. Balls		*13@1.*
India 3-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine)		*8c*
India 3-Ply Hemp, 1-lb. Balls		*8c*
India 3-Ply Hemp, 1½-lb. Balls		*7c*
2, 3, 4 and 5-Ply Jute, ½-lb. Balls		*9@1.*
Mason Line, Linen, ½-lb. Balls		*15c*
No. 264 Mattress, ¼ and ½-lb. Balls		*8c*
Wool, 3 to 6 ply		*6c*

Vises—

Solid Box 50@50&10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Bonney's 40%
Columbian Hdw. Co 40%
Fisher & Norris Double Screw 15&10%
Hollands':
Machinists' 40%
Keystone 65&5%
Lewis Tool Co 20@30%
Massay's Perfect 15@20%
Massey's:
Clincher 30@40%
Combination, Quick Adj. 40%
Woodworker's 15@20%
Merrill's 20%
Miller's Falls 50&10&10%
Parker's:
Victor 30@25%
Regulars 30@25%
Vulcan's 40@45%
Combination Pipe 55@60%
Prentiss 30@25%
Sargent's 40%
Snediker's X. L. 30@25%
Stephens' 30@25%

Saw Filers—

Bonney's, No. 1, $13; No. 3, $16 50%
Disston's D 8 Clamp and Guide, ₩ doz $30 25%
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 45&50%

Miscellaneous—

Bignall & Keeler Combination Pipe Vise 60%
Parker's Combination Pipe:
87 Series 60%
187 Series 60&5%
No. 870 40%

Wads—Price Per M.

B. E., 11 up	*80c*	*Dis. 50&5%*
B. E., 9 and 10	*70c*	
B. E., 8	*80c*	
B. E., 7	*80c*	
P. E., 11 up	*$1.00*	
P. E., 9 and 10	*1.25*	
P. E., 8	*1.50*	
P. E., 7	*1.50*	
Ely's B. E., 11 and larger	*$1.70@1.75*	
Ely's P. E., 12 to 20	*$3.00@3.25*	

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Aluminum—
S. S. & Co. Reduced List 40%

Cast Iron, Hollow—

Stove Hollow Ware:
Ground 65%
Unground 70%
White Enameled Ware:
Manlin Kettles 75&10&5@80%
Covered Ware:
Tinned and Turned 40&10@40&10&5%
Enameled and Plain 50@50&10&5%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware, list Nov. 1, '01 50&20%
Iron Clad Ware 70&10%
Never Break Enameled 50&5@50&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	*6*	*7*	*8*	*9*
Each	*45c*	*50c*	*55c*	*65c*

Steel Hollow Ware.

Avery Spiders & Griddles 65@65&5%
Avery Kettles 60%
Porcelained 50&5@50&10%
Never Break Spiders and Griddles 65&5%
Never Break Kettles 60%
Solid Steel Spiders & Griddles 65&5%
Solid Steel Kettles 60%
Solid Steel Ware, Enameled 50&5%

Washboards—

Solid Zinc: ₩ doz
Crescent, family size, bent frame $3.00
Red Star, family size, stationary protector $3.00
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $2.65
Cable Cross, family size, stationary protector $2.90
Single Zinc Surface:
Naiad, family size, open back perforated $2.40
Saginaw Globe, protector, family size, ventilated back $2.25

Brass Surface:
Brass King, Single Surface, open back $3.00
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.00

Washers—
Leather, Axle—
Solid.....85&10&10@85&10&10&10%
Patent.....85&10@85&20%
Coil: ⅛ 1 1½ 1¾ *Inch.*
10c 11c 12c 13c *per 100*

Iron or Steel
Size bolt.... *5-16* ⅜ ½ ⅝ ¾
Washers....$5.10 4.20 3.90 3.70 3.50
In lots less than one keg add ¼c per lb., 5-lb. boxes add ½c to list.

Cast Washers—
Over ½ inch, barrel lots per lb...... 1½@1¾c

Washer Cutters—
See *Cutters, Washer.*

Washing Machines—
See *Machines, Washing.*

Water Coolers—
See *Coolers, Water.*

Wedges—
Oil Finish.....*lb.* $.90@$.10c

Weights, Sash
Per ton, f.o.b. factory....$21.00@22.00

Some Foundries make price $1@$2 lower.

Well Buckets, Galvanized
See *Pails, Galvanized.*

Wheels Well—
8-in.. $1.45@1.65; 10-in., $1.75@2.00; 12-in., $2.50@2.50; 14-in., $3.50@3.75

Wire and Wire Goods—
Bright and Annealed:
6 to 9.....72½&5@72½&10%
10 to 18.....72½&10@72½&10&5%
19 to 26.....75&10&10&5%@75&10&10&10%
27 to 36.....75&10&10&7½@80&10&10%
Galvanized:
6 to 18.....70@70&5%
19 to 26.....72½&5@72½&10%
27 to 36.....72½&10@72½&10&5%
Coppered:
6 to 9.....70&5@70&10%
10 to 18.....70&10@70&10&5%
19 to 26.....75&7½@75&10&10&5%
27 to 36.....75&10@75&10&5%
Tinned:
6 to 14.....75@75&7½%
15 to 18.....72½&5@72½%
19 to 26.....70&5@70&5&5%
27 to 36.....70@70&5%
Annealed Wire on Spools..70&5@70&10%
Brass and Copper Wire on Spools..60&5@60&10%
Brass, list Feb. 26, '96.....25%
Copper, list Feb. 26, '96.....15%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—
List April 1, 1901.....85&10%

Wire Cloth and Netting—
Galvanized Wire Netting..80&20@..%
Painted Screen Cloth per 100 ft..$1.00
Light Hardware Grade:
2-18 Mesh, Plain (8c. list) sq. ft.. 1¼@1¾c
2-18 Mesh, Galv. (8c. list) sq. ft.... 2¼@2¾c

Wire, Barb—See *Trade Report.*

Wire Rope—See *Rope, Wire.*

Wrenches—
Agricultural.....70&10@75&10%
Case lots.....75&10%
Acme.....60&10%
Alligator.....70%
Baxter's S.....60&10%
Bull Dog.....70%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable S Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&5%
Combination Bright.....40%
Cylinder or Gas Pipe.....40%
Extra Heavy.....40%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....50%
Bindley Automatic.....60%
Boardman's.....35½%
Coes' Genuine.....40&10&5&5%
Coes' "Mechanics'".....40&10&10&5&5%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Elgin Wrenches.....40%
Elgin Monkey Wrench Pipe Jaws...33⅓%
Gem Pocket.....30%
Hercules.....70%
Knife Handle, Machinists' (W. & B.):
Case lots.....50&10%
Less than case lots.....50&5%
Improved Pipe (W. & B.).....60%
Solid Handles, P. S. & W.....50@50&10%
Stillson.....65%
Triumph.....60&10%

Wrought Goods—
Staples, Hooks, &c., list March 17 '92.....90@90&10%

Yokes Neck—
Covert Saddlery Works, Trimmed.60&5%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers & Freighters'.. list net

Zinc—
Sheet.....*lb* 6¼c@6¾c

PAINTS, OILS AND COLORS—Wholesale Prices.

White Lead, Zinc, &c.
Lead, English white, in Oil.....@ 9¼
Lead, American White, in Oil:
Lots of 500 ℔ or over.....@ 6
Lots less than 500 ℔.....@ 6¼
Lead, White, in oil, 25 ℔ tin pails, add to keg price.....@ ¼
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.....@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price..@ 1½
Lead White, Dry in bbls.....5½@ 6
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry.....℔ ℔ 4¾@ 4¾
Zinc, Paris, Red Seal, dry.....@ 8½
Zinc, Paris, Green Seal, dry.....@ 9½
Zinc, Antwerp Red Seal, dry.....@ 6½
Zinc, Antwerp, Green seal, dry..@ 8
Zinc, V. M. French, in Poppy Oil, Green Seal:
Lots of 1 ton and over.....12 @12½
Lots of less than 1 ton.....12¼@12¾
Zinc, V. M French, in Poppy Oil, Red Seal:
Lots of 1 ton and over.....10¾@11¼
Lots of less than 1 ton.....11@11½
DISCOUNTS.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors.
Black, Carbon.....℔ ℔ 8 @20
Black, Drop, Amer.....4 @ 7
Black, Drop, Eug.....7 @11
Black, Ivory.....12 @21
Lamp, Com.....4½@ 6
Blue, Celestial.....℔ ℔ 4 @ 6
Blue, Chinese.....30 @35
Blue, Prussian.....28 @34
Blue, Ultramarine.....4 @20
Brown, Spanish.....1½@ 1
Brown, Vandyke, Amer.....1½@ 2¼
Brown, Vandyke, Foreign.....2¼@ 3½
Carmine, No. 40.....℔ ℔2.05@2.75
Green, Chrome, ordinary.....5 @ 6½
Green, Chrome, pure.....16 @20
Lead, Red, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over.....@ 5½
Lots less than 500 ℔.....@ 6
Litharge, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over.....@ 5½
Lots less than 500 ℔.....@ 6
Ocher, French Washed.....1¾@ 1¾
Ocher, Dutch Washed.....4½@ 5
Ocher, American.....℔ ton $10.00@15.00
Orange Mineral, English..℔ ℔ 11½@11½
Orange Mineral, French....11 3-16@11¼
Orange Mineral, German.....8¼@10½
Orange Mineral, American.....7½@ 7¾
Red, Indian, English.....4½@ 8½
Red, Indian, American.....3 @ 3¼
Red, Turkey, English.....4 @ 6
Red, Tuscan, English.....7 @10
Red, Venetian, Amer..℔ 100 ℔. 80@1.75
Red Venetian, English.℔100 ℔ 1.80@3.00
Sienna, Italian, Burnt and Powdered.....℔ ℔ 3½@ 7½
Sienna, Ital., Raw, Powd.....3½@ 7½
Sienna, American, Raw.....1½@ 2
Sienna, American, Burnt and Powdered.....℔ ℔ 1½@ 2
Talc, French.....℔ 100 ℔ $1.25@1.50
Talc, American.....90 @1.10
Terra Alba, French, ℔ 100 ℔ .95 @1.00
Terra Alba, English.....95 @1.00
Terra Alba, American No. 1....65 @85
Terra Alba, American No. 2....45 @50
Umber, Turkey, Bnt. & Pow.℔ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer.....1½@ 2
Umber, Raw, Amer.....1½@ 2
Yellow, Chrome.....10½@35
Vermilion, American Lead.....10 @40
Vermilion, Quicksilver, bulk.... @70
Vermilion, Quicksilver, bags.... @71
Vermilion, English, Import...80 @95
Vermilion, Chinese.....$1.05@1.20

Colors in Oil.
Black, Lampblack.....12 @14
Blue, Chinese.....36 @40
Blue, Prussian.....32 @36
Blue, Ultramarine.....13 @16
Brown, Vandyke.....9¼@13
Green, Chrome.....10 @12
Green, Paris.....@24
Sienna, Raw.....10 @13
Sienna, Burnt.....10 @13
Umber, Raw.....9¼@12
Umber, Burnt.....9¼@12

Miscellaneous.
Barytes, Foreign, ℔ ton....$19.00@21.00
Barytes, Amer. floated.....19.00@20.00
Barytes, Crude, No. 1.....9.00@10.00
Chalk, in bulk.....℔ ton 2.50@ 2.60
Chalk, in bbls.....℔ 100 ℔ ..@ 35
China Clay, English..℔ ton 12.00@17.50
Cobalt, Oxide.....℔ 100 ℔ 2.20@ 2.50
Whiting, Common.℔ 100 ℔ .40@ .60
Whiting, Gliders.....45½@ .65
Whiting, extra Gilders'.....55@ .68

Putty.
In bladders.....$2.25
In bulk.....1.25
In cans, 1 ℔ to 5 ℔.....3.25
In cans 12 ℔ to 25 ℔.....2.25

Spirits Turpentine.
In Southern bbls.....40½@41 ¢
In machine bbls.....41 @41½¢

Glue.
Cabinet.....11½@16
Extra White.....18 @23
French.....12 @40
Irish.....13½@16
Low Grade.....℔ ℔ 9 @12
Medium White.....14½@16½

Animal, Fish and Vegetable Oils.
Linseed, City, raw.....℔ gal..60 @62
Linseed, City, boiled.....62 @64
Linseed, State and West'n, raw.60 @61
Linseed, raw Calcutta seed.....@85
Lard, Prime.....80 @82
Lard, Extra No. 1.....57 @58
Lard, No. 1.....49 @50
Cotton-seed, Crude.....@..
Cotton-seed, Summer Yellow, prime.....43 @44
Cotton-seed Summer Yellow, off grades.....41 @42
Sperm, Crude.....@..
Sperm, Natural Spring.....60 @61
Sperm, Bleached Spring.....@..
Sperm, Natural Winter.....75 @77
Sperm, Bleached Winter.....78 @80
Tallow, Prime.....60 @65
Whale, Crude.....@..
Whale, Natural Winter.....46 @47
Whale, Bleached Winter.....48 @49
Menhaden, Crude, Sound.....@..
Menhaden, Light Strained.....32 @34
Menhaden, Bleached Winter...34 @35
Menhaden, Ex Bleached Winter36 @37
Cocoanut, Ceylon.....7¾@ 8¼
Cocoanut, Cochin.....8¼@ 8¾
Cod, Domestic.....33 @34
Cod, Newfoundland.....35 @40
Red Elaine.....@42
Red Saponified.....℔ ℔ 6 @ 6½
Olive, Italian, bbls.....57 @ 60
Neatsfoot, prime.....57 @58
Palm, prime, Lagos.....℔ ℔ 5¾@ 6

Mineral Oils.
Black, 20 gravity, 25@30 cold test.....℔ gal. 9¾@ 10¼
Black, 29 gravity, 15 cold test. 10¾@ 11½
Black, summer.....9¼@ 9¾
Cylinder, light filtered.....14¾@17½
Cylinder, dark filtered.....11¼@15½
Paraffine, 903-907 gravity.....12¼@12¾
Paraffine, 903 gravity.....11¼@11¾
Paraffine, 888 gravity.....9¼@10
Paraffine, red, No. 1.....12¼@12¾
In small lots ¼¢ advance.

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

JANUARY 15, 1902.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₩ lb; Square, 0.8¢ ₩ lb
1 to 1¾ in. round and square ..... } ₩ lb 1.90@2.00¢
1¼ to 4 in. x ⅜ to 1 in..... }
Refined Iron:
1 to 1¾ in. round and square..... } ₩ lb 1.95@2.05¢
1¼ to 4 in. x ⅜ to 1 in..... }
1¼ to 4 in. x ¼ to 5-16..... ₩ lb 2.05@2.15¢
Rods—⅜ and 11-16 round and square. ₩ lb 2.25@2.35¢

Angles:	Cts ₩ lb
3 in x ¼ in. and larger	2.50¢
3 to 3½ in. x 3-16 in	2.50¢
1¼ to 3 in. x ¼ in	2.50¢
1¼ to 2¾ in. x 3-16 in and thicker	2.20@2.30¢
1 to 1¼ in. x 3-16 in	2.30@2 40¢
1 to 1¼ x ⅛ in	2.40@2.50¢
⅞ x ⅛ in	2 60¢
¾ x ⅛ in	2.75¢
⅝ x ⅛ in	3.50¢
½ x 3-32 in	4.50¢
Tees:	
1 in	2.80¢
1¼ in	2.60¢
1½ in. and larger	2 50¢
Beams	2.50@3.00¢
Channels, 3 in. and larger	2.50@3.00¢
Bands—1¼ to 6 x 3-16 to No. 8	₩ lb 2.30¢
"Burden's Best" Iron, base price	₩ lb 3.15¢
Burden's "H. B & S. Iron, base price	₩ lb 2.95¢
"Ulster"	₩ lb 3.60¢
Norway Bars	3 75@4.25¢
Norway Shapes	4.00@4.50¢

Merchant Steel from Store—

	per lb
Bessemer Machinery	1.90 to 1.95¢
Toe Calk, Tire and Sleigh Shoe	2.00@2.50¢
Best Cast Steel, base price in small lots	7½¢
Best Cast Steel Machinery, base price in small lots	6 ¢

Soft Steel Sheets—

¼ inch	2.20¢	No. 14	3.00¢
8-16 inch	2.30¢	No .16	3.20¢
No. 8	2.40¢	No. 18	3.40¢
No. 10	2.60¢	No. 20	3.70¢
No. 12	2.90¢	No. 22	3.80¢

Sheet Iron from Store.

Black.

	One Pass, C. R. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	₩ lb, 3.60	3.65¢
Nos. 18 to 21	₩ lb, 3.70	3.75¢
Nos. 22 to 24	₩ lb, 3.80	3.85¢
Nos. 25 and 26	₩ lb, 3.90	3.95¢
No. 27	₩ lb, 4.00	4.05¢
No. 28	₩ lb, 4.10	4.15¢

Russia, Planished, &c.

Genuine Russia, according to assortment ..... ₩ lb 11@14¢
Patent Planished ..... ₩ lb A, 12¢; B, 11¢, net

Galvanized.

	B. B.
Nos. 10 to 16	₩ lb, 12¢ }
Nos. 17 to 21	₩ lb, 13¢ }
Nos. 22 to 24	₩ lb, 14¢ }
Nos. 25 to 26	₩ lb, 15¢ } 66@67½% off
No. 27	₩ lb, 16¢ }
No. 28	₩ lb, 17¢ }
No. 29	₩ lb, 19¢ }
No. 30	₩ lb, 21¢ }

36 in. 1¢ ₩ lb higher.

Foreign Steel from Store—

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 18 @ 20 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 13 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12 ¢
R. Mushet's "Special"	₩ lb 46 ¢
" " Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 19 ¢
Hobson's Choice XX Extra Best	₩ lb 35 ¢
Jessop Self Hardening	₩ lb 45 ¢
Seamans' "Nelson" Steel	40 ¢
Hobson's "Soho" Special Self-Hardening	₩ lb 43 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.	Per lb
Banca, Pigs	23¾@24¼¢
Straits, Pigs	23¾@24¼¢
Straits in Bars	24¼@25¼¢

Tin Plates—

American Charcoal Plates.

Calland Grade:	
IC, 14 x 20	$7.25
IX, 14 x 20	8.75
Melyn Grade:	
IC, 14 x 20	6.75
IX, 14 x 20	8.25
Allaway Grade	
IC, 14 x 20	6.25
IX, 14 x 20	7.25

American Coke Plates—Bessemer—

IC, 14 x 20 ..... 108 lb	$5.00@5.25
IX, 14 x 20	$6.00@6.25

American Terne Plates—

IC, 20 x 28	$10.00
IX, 20 x 28	$12.00

Tin Boiler Plates, American—

XX, 14 x 26 ..... 112 sheets	$12.50
XX, 14 x 28 ..... 112 sheets	13.50
XX, 14 x 31 ..... 112 sheets	15.00

Copper—

Duty: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₩ lb.

Ingot—

Lake	13 @13¼¢
Casting	12¾@13 ¢

Sheet and Bolt—

January 2, 1902. Prices, in cents per pound. Net.
Sheet 30 x 60.

Not wider than	Not longer than	And longer than	64 oz. & over, 50 lb. sheet, 30 x 60 and heavier.	32 oz. to 64 oz. 25 to 50 lb.	24 oz. to 32 oz. 18¾ to 25 lb.	16 oz. to 24 oz. 12½ to 18¾ lb.	14 oz. and 15 oz. 11 to 12½ lb.	12 oz. and 13 oz. 9½ to 11 lb.	10 oz. and 11 oz. 7¾ to 9½ lb.	8 oz. and 9 oz. 6¼ to 7¾ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	18	18	18	18	19	20	21	24	27
30	96	72	18	18	18	18	19	21	24	27	
30	.....	96	18	18	18	18	20	24			
36	72	.....	18	18	18	18	20	22	25	28	
36	96	72	18	18	18	18	20	24	27		
36	120	96	18	18	18	19	21				
36	.....	120	18	18	19	20					
48	72	.....	18	18	19	20	22	25	28		
48	96	72	18	18	19	21	23	26			
48	120	96	18	18	20	20	26				
48	.....	120	18	19	21	24					
60	72	.....	18	18	19	21	24	29			
60	96	72	18	18	20	22	27				
60	120	96	18	19	21	24					
60	.....	120	19	20	22	26					
72	96	.....	18	19	21	26					
72	120	96	18	20	23	28					
72	.....	120	19	21	26						
108	96	.....	19	21	24						
108	120	96	20	22	25						
108	.....	120	21	23	27						
wider than 108	132	.....	22	24							
	.....	132	23	26							

Rolled Round Copper, ⅜ inch diameter and over, ₩ lb 18¢.
Circles, Segments and Pattern Sheets, 3¢ ₩ lb advance over price of sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper, 20 in. wide and under 1¢ ₩ lb advance over the price for Cold Rolled Copper.
All Polished Copper, over 20 in. wide, 2¢ ₩ lb advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₩ lb more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₩ lb	2 ¢
12 oz. and up to 14 oz. to square foot, ₩ lb	3 ¢
10 oz. and up to 12 oz., ₩ lb	25¢
Lighter than 10 oz., ₩ lb	28¢

Circles less than 8 in. diameter, 2¢ ₩ lb additional.
Circles over 18 in. diameter are not classed as Copper Bottoms.
Polished Copper Bottoms and Flats, 1¢ ₩ lb extra.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.
List Feb. 20, 1901.

Nos.	0000 to 8	9 and 10	11 and 12
	Base	¼¢	¾¢ ₩ lb adv.
Nos.	13	14 15	16
	½¢	¾¢ 1¢	1¼¢ ₩ lb adv.
Nos.	17	18 19	20
	1¾¢	2¢ 2¼¢	2¾¢ ₩ lb adv.

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.
Feb. 6, 1899. Net. Outside Diameter.

Stubs' W.G.	B. & S. W.G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	3- 9	...	.....	...	.....	33	31	30	29	28	27	25	24
12	10	...	.....	37	35	33	31	30	29	28	27	25	24
13	11	...	.....	37	35	33	31	30	29	28	27	25	24
14	12	...	41	37	35	33	31	30	29	28	27	25	24
15	13	...	40	38	36	33	32	31	30	30	28	26	25
16	14	...	43	39	37	34	33	32	31	30	29	26	25
17	15	...	44	40	38	35	34	33	32	31	30	27	26
18	16	61	45	42	39	36	35	34	32	31	30	28	27
19	17	62	47	43	40	37	36	35	34	33	32	30	29
20	18-19	64	49	44	41	39	38	37	36	35	34	32	32
21	20	66	51	46	43	41	40	39	38	37	36	35	34
22	21	71	56	48	44	42	41	40	39	38	37	37	36
23	22	76	61	50	46	44	43	42	41	40	39	39	39
24	23	81	66	53	48	46	45	44	43	41	40	40	41
25	24	86	71	56	51	49	47	46	45	43	43	44	45

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
30	30	30	27	27	21	21	21	21	21	21	21	23	23	25	27 28¢₩lb

Copper, Bronze or Gilding Tubes, 3¢ ₩ lb additional

Brazed Brass Tubing.

(*To No. 19, inclusive.*) July 6, 1898.
Brown & Sharpe's gauge standard.

	Per lb.
Plain Round Tube, ⅛ in. up to ½ in.	$0.35
" " ⅛ " ¾ "	.36
" " ¼ " ¾ "	.38
" " ¼ " 1 "	.41
" " 5-16 " 1 "	.48
" " ⅜ " 1 " 5-16 "	.65
" " 3-16 " 1¼ "	1.00
" " ½ " 3-16 "	1.50
Smaller than ⅛ inch	Special
⅛ inch to 3 inch, to No. 19, inclusive	.38
3 inch	.40
Over 3 inch to 3½ inch, inclusive	.45
Over 3½ inch	.50

Bronze and Copper, advance on Brass List, 3 cents.
Discount from list 5 ..... 40%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass Wider than and including	in. 2 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24	in. 24 26
To No. 20 inclusive	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.36	.39
Common High Brass Wider than and including	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40	in. 40
To No. 20, inclusive	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28	.42	.45	.49	.53	.58	.65	.75	

* Special prices not less than 80 cents.
Add ½¢ ₩ lb additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List..... 30%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gilt'g bronze and copper
All Nos. to No. 10, inclusive	$0.23	$0.27	$0.28
Above No. 10 to No. 16	.23½	.27½	.28½
No. 17 and No. 18	.24	.28	.32
No. 19 and No. 20	.25	.29	.33
No. 21	.26	.30	.34
No. 22	.27	.31	.35
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.62
No. 31	.51	.55	.67
No. 32	.55	.59	.73
No. 33	.59	.63	.89
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	3.25
No. 40	2.60	2.60	5.75

Discount, Brass Wire, 35%; Copper Wire, Net.
List November 16, 96.
Spring Wire, 2¢ ₩ lb advance.

Tobin Bronze—

Straight, but not turned, Rods, ⅝ to 3 in. diameter, ₩ lb, net ..... 30¢
Finished Piston Rods, ⅝ to 2½ in. diameter, ₩ lb net. 21¢
Other sizes and extreme lengths, special prices.

Spelter—

Duty: In Blocks or Pigs, 1¢ ₩ lb
Western Spelter ..... 4¾@4¾¢

Zinc.

Duty: Sheet, 2¢ ₩ lb.
600 lb casks ..... 6¾¢ | Per lb ..... 7¼¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American Pig	4.40@4.45¢
Bar	5 @5½¢
Pipe	6¾¢ ..... 20% off
Tin Lined Pipe	12½¢ ..... 20% off
Block Tin Pipe	25 ¢ ..... 20% off
Sheet Lead, full rolls	7¼¢ ..... 20% off
Sheet Lead, cut	7¾¢ ..... 20% off
Old Lead in exchange, 1¢ ₩ lb.	

Solder.

½ & ⅜ guaranteed ..... 16½@17 ¢
No. 1 ..... 14 @15½¢
Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ½¢ ₩ lb.
Cookson ..... ₩ lb 10½@10¾¢
Hallett's ..... ₩ lb 8¼@8½¢
U. S. ..... ₩ lb 8 @8¼¢

Aluminum—

Duty: Crude, 8¢ ₩ lb. Plates, Sheets, Bars and Rods, 13¢ ₩ lb.
No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:
Small lots ..... ₩ lb 37¢
100-lb lots ..... ₩ lb 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:
Small lots ..... ₩ lb 34¢
100-lb lots ..... ₩ lb 33¢
Aluminum Sheet, B. & S. gauge. 50 lb or more

Wider than	6-in.	14-in.	24-in.
And including	14-in.	24-in.	30-in.
	₩ lb.	₩ lb.	₩ lb
Nos. 13 to 19	$0.42	$0.44	$0.47
No. 20	.44	.46	.49
Nos. 21 to 23	.46	.48	.51
No. 24	.46	.50	.53
No. 25	.47	.51	.54
No. 26	.47	.54	.59
No. 27	.48	.57	.62
No. 28	.48	.57	.64
No. 29	.49	.60	.69
No. 30	.50	.64	.77

Note.—Lots of less than 50 lb 5¢ ₩ lb extra.
Aluminum Wire, B. & S. Gauge.

Larger than No. 9, ₩ lb 40¢	No. 15 ..... ₩ lb 43¢
No. 9 to No. 10 ..... ₩ lb 40½¢	No. 17 ..... ₩ lb 50¢
No. 11 ..... ₩ lb 41 ¢	No. 18 ..... ₩ lb 55¢
No 12 ..... ₩ lb 41½¢	No. 19 ..... ₩ lb 60¢
No. 13 ..... ₩ lb 42 ¢	No. 20 ..... ₩ lb 65¢
No. 14 ..... ₩ lb 42½¢	No. 21 ..... ₩ lb 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper	₩ lb 10 ¢
Light and Tinned Copper	₩ lb 8½¢
Heavy Brass	₩ lb 7½¢
Light Brass	₩ lb 6 ¢
Lead	₩ lb 3½¢
Tea Lead	₩ lb 3½¢
Zinc	₩ lb 2½¢
No. 1 Pewter	₩ lb 16 ¢
No. 2 Pewter	₩ lb 8 ¢
Tin Plate Scrap	₩ ton $8.00 @ 6.50
Wrought Scrap Iron	₩ gross ton $11 00@11.50
Heavy Cast Scrap	₩ gross ton $10.50@11.00
Stove Plate Scrap	₩ gross ton $8.00@ 8.25
Burnt Iron	₩ gross ton $5.50@ 5.75